

AMERICAN BEE JOURNAL

JULY, 1918



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Botanical Editor of "The A B C of Bee Culture"

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American Bee Journal, Hamilton, Ill.

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VOL. LVIII—NO. 7

HAMILTON, ILL., JULY, 1918

MONTHLY, \$1.00 A YEAR

MEXICAN BEEKEEPING

Primitive Methods of Beekeeping Practiced by the Mexican Peons in the Lower Rio Grande Valley, as Seen by Frank C. Pellett

THE visitor to the lower Rio Grande Valley finds himself in strange surroundings. Even the man who has lived for years in Central Texas finds conditions unfamiliar. When our party arrived at Brownsville, in February, the wild oranges were hanging on the trees and the roses were in bloom, although there had been some frost. The wild oranges, like the wild crab-apples of the north, are ungathered, because they are so sour as to be unpalatable. Loads of cabbages were going to market and fields of lettuce were ready to harvest. There was little to indicate the zero temperature which had so recently been left behind at our northern home.

Brownsville is a quaint old town with a foreign aspect. Mexican women sit on the sidewalks offering their drawn work for sale, Mexican boys carry papers from door to door, while their dark-skinned daddies drive their funny carts about the streets. More than half the population of the city and surrounding country seems to be Mexican. Not far from the city are to be found villages composed entirely of Mexican population, with perhaps none who understand the English language. The houses in these villages are made of palms or canes, with roofs of similar material. In our last issue was shown a picture of some of the houses in such a village, and figure 1 in connection with this story shows the home of the apiary herein described. This house is made partly of boards, while many of them are built entirely of such palms or grasses as happen to be within reach. In such a climate there is scant provision made for protection from cold. To keep dry is all that is necessary during most of the year.

Now and then, during the winter months, there are damp and chilly days when the weather is extremely disagreeable. Although it seldom frosts, one feels the chill keenly without plenty of clothing or a good fire.

Mention has already been made of the great variety of flora in the valley. About all the thorny species of West Texas are present, with the addition of a great variety of plants similar to those found further north. In the north, the elm is one of the earliest sources of pollen in the spring. The species of elm that is common in the valley blooms in mid-

summer. The willows also are common. They are among our most widely distributed trees, being found from the far north to the Mexican boundary.

The birds are as strange as the plants. Green jays, inca doves and chaparral cocks take the place of the familiar species of the north. The English sparrow is about the only familiar bird to be seen. In east Texas one finds most of the birds which he knew in the north, but in the Brownsville country they are nearly all strangers. The turkey vulture is a common bird everywhere in



Fig. 1. Home of the proprietor of the apiary.

Texas, but no crows are to be seen in the valley.

A whole chapter might be written about the ants of Texas. There are very interesting species to be found there, including the agricultural ants, which cut down every plant about their mounds except what is known as ant rice, thus giving this plant special opportunity to grow.

The cutting ant is even more remarkable in its habits, since it carries bits of leaves to its nest for the purpose of reducing them to pulp and cultivating a fungus. The long files of these insects on the march, each with a piece of leaf over its head, gives them the name of "umbrella ants" in some places. There are so many things of interest that a naturalist gets fussed, because there is not time enough to see them all.

One of the most interesting things is a small yellow insect, which greatly resembles the common yellow jacket of the north. It has some characteristics of the wasps, and some of the bees. The nest is composed of paper like that of the bald-faced hornet, or the yellow jacket. The cells are small, being about the same size as those of the yellow jacket; but the nest is large, one that we saw being nearly three feet through, the long way. The astonishing thing about this insect is the fact that, while its nest is made of paper like that of any other wasp, it stores honey like the honeybee. The honey is not sealed in the combs, however. The Mexicans are fond of the honey, and hunt for these paper nests for the small amount of honey secured. Local beekeepers also assert that it swarms like the honeybee. The question arises whether it is a wasp or a bee. Unfortunately, we were unable to find any nests which were occupied, although several empty ones were shown to us. So many different persons vouched for the above facts concerning the



Fig. 3. Looking in, one sees rude shelters under which are placed the bees.

habits of the species that we could not doubt them. If the insect has been described in our literature, I have so far been unable to find it.

There were four of us in the party, in the journeys about Brownsville. Mr. A. Lynn Stephenson, a local beekeeper, certainly knew where to find interesting things. He knows not only the bees of the valley, but the plants and the people. No stranger would have been able to find the apiary which furnished the photos to illustrate this article. We drove for some distance along a well traveled highway and then turned into a little by-road that wound around through the cactus and brush for a long way, until it ended at a little Mexican village in a bend of the Rio

Grande river. The village itself was situated on the bluff overlooking the river, while immediately below it was a considerable acreage of cleared land which was being prepared for crop. Mr. Stephenson acted as interpreter, and secured for us the permission to visit the apiary and secure the desired photographs. On another occasion, when the party started out without him, we made slow progress, since no one could talk Spanish, and we were unable to make ourselves understood.

If this was a farm paper instead of a bee journal, some of the Mexican goat ranches that we passed would be worthy of a story.

In all my travels I have never seen anything in the way of an apiary that bore the slightest resemblance to the one we found there. Enough has already been said about the climatic conditions to make it clear that there is much swarming among the bees in the valley. This apiary is conducted primarily for wax, rather than for honey. At one time there were several hundred colonies, although the number had been reduced somewhat at the time of our visit.

The first thing one sees is a high fence made of canes, as shown in figure 2. The purpose of this fence is not entirely clear, since the gateway is open with no provision for closing it. This fence surrounds the apiary on three sides, while the fourth side is the bluff above the river. On coming to the gateway and looking in, one sees rude shelters similar to the Mexican houses, under which are placed the bees. Once inside, one finds several of these huts, and under each are rows of the bee boxes. The purpose of the huts is clear enough, for the midsummer days are hot, and shade is very desirable for protection from the extreme heat.

The hives are nothing more than rough boxes. Unlike the box hive,

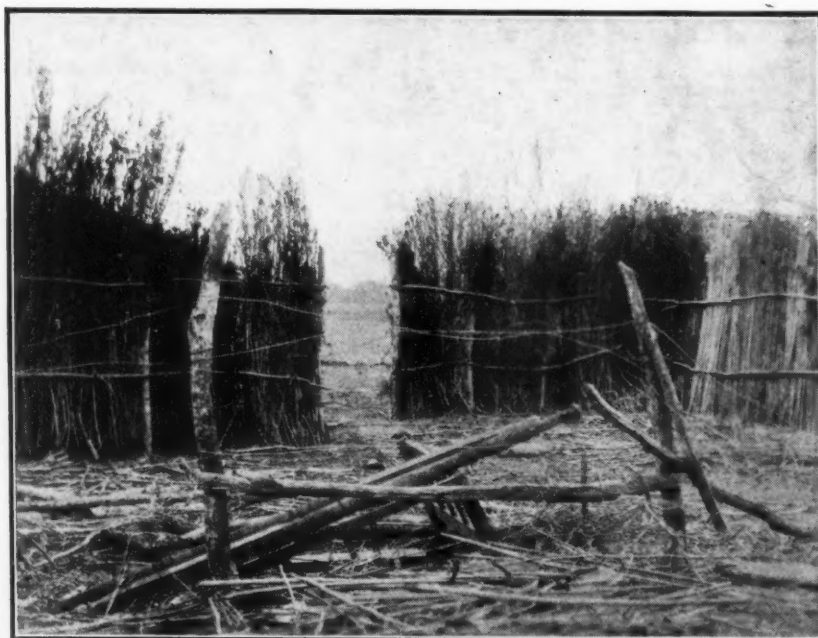


Fig. 2. Fence of canes about the apiary.



Fig. 4. Inside, one finds several of these huts in a row and under each are rows of bee-boxes.

one side is left entirely open, or a sheet of burlap or cheesecloth is hung over it. Of the hundred or more hives, perhaps one-third had a cloth hung across the front, the rest were entirely open, as shown in figure 5.

About twice each year the combs are all cut out and the bees thrown back into the empty boxes. There is, of course, much loss from the melting of combs filled with brood, but the peon is indifferent to that. The wax is a saleable commodity and the bees will soon re-establish themselves. The wax is sold, for the most part, to the Catholic priests for the making of wax candles for ceremonial purposes.

This system has one great advantage over the box hive beekeeping of other sections; it automatically eliminates American foulbrood. With all the combs melted up at such frequent intervals, this disease can never get much of a start among the bees, and the nearby beekeeper, following practical methods, needs have but little fear of the harboring of American foulbrood by his Mexican neighbors.

"Honey for Cooking"

By Dr. Burton N. Gates, Associate Professor of Beekeeping, Massachusetts Agricultural College

"HONEY for Cooking" is an expression commonly met with in talking to the public who are eager to supplement and to save the sugar supply, but who at the same time are anxious to make a portion of their usual preserves, jellies and jams and to prepare their household foods. The public is ready to use honey in the various ways but they say "Honey for Cooking" is so expensive. The only remark in reply is, in Yankee fashion, a question, "Are you sure that it is so much more expensive than sugar?"

When purchased in jelly tumblers or less than pound packages, the rate

is high. The consumer pays for the bottle, for the handling, overhead charges, cost of selling, etc. Unfortunately, too, few markets offer honey in more than two-pound packages. It is seldom that a five-pound pail or a ten-pound pail can be procured other than from some beekeeper. On the other hand, maple syrup is to be had by the gallon. The question may be raised, therefore, are the beekeeper and packer at fault in supplying the small package of honey and not offering a larger package? There is every indication that the jobber and retailer will handle it if it is available. The public is in a receptive mood, ready to learn how to liquefy candied honey, how to properly keep it and use it, if obtainable in bulk. But if sold in large packages it would seem that the prices should be consistent with the

lessened cost of packing and handling.

Since the expression "Honey for Cooking" is so commonly met with, why not use it as a catch word in introducing perhaps, first, the five-pound package, and later the ten-pound? Let the package bear these words and with them a brief explanation of liquefying the candied honey and of properly keeping it after liquefied. Brief suggestions for utilizing honey in the preparation of foods and preserves could also be included.

There is another feature. The eastern producer who is in the midst of large and dense populations finds a ready sale locally for all the honey which he produces; moreover, he finds that the pound package is his best selling size. Probably his best profits are on this size. Therefore, there is little inducement for him to pack in larger containers, thereby reducing the price and his profits. However, low grade honey produced in the commercial apiaries of the west might well be packed and graded ready for eastern retail trade and known on the eastern market as "Honey for Cooking." Perhaps it would help the producer to dispose of his darker honey. The question, therefore, may be raised: is there not an opportunity to wholesale, properly labeled, five, and possibly ten-pound containers, crated in lots of six and shipped in a wholesale way ready to be disposed of directly to the jobbing grocers? It would cost the producer slightly more to prepare his honey for market in this form, rather than in the sixty-pound cans, but it is the writer's opinion that a satisfactory profit could be obtained and yet the honey made available for cooking purposes at a cost attractive to the public.

There would be needed a little educational work among the jobbers. Perhaps, too, the retailers would need to be informed. The public, however, is ready

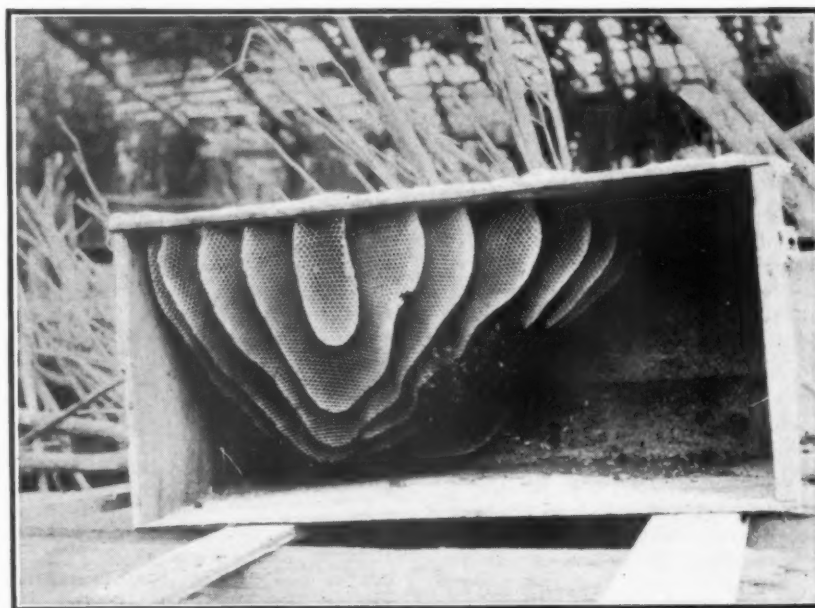


Fig. 5. The hive is entirely open in front.



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FRANK C. PELLETT, Staff Correspondent.

IMPORTANT NOTICE

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THE EDITOR'S VIEWPOINT

Foulbrood Kill or Cure

Through carelessness on the part of the printer, 3 lines were dropped out of the editorial in the May number. It made a part of the editorial unintelligible. Alas, that printers are not perfect. Meanwhile we received a very interesting letter on the same subject from an Ohio inspector, Mr. A. C. Ames. The reader will find it in this number. It is worth perusing, for it tells things about inspection which the average beekeeper does not know.

How to Keep Bees

We are in receipt of a second edition of a bulletin with the above title, written by the well-known and experienced apiarist, Arthur C. Miller, and published under the auspices of the Rhode Island State Board of Agriculture. The book contains 50 pages and a number of illustrations. In so short a space one cannot expect a full treatise. But the directions given are certainly the most important for the beginner in beekeeping. The book may be secured from the State Board of Agriculture at Providence, Rhode Island.

Diet and Disease

J. L. Rentoul, in the British Bee Journal, suggests, May 2, that "Isle of Wight" disease, which is quite similar to our "constipation" or "paralysis" or "May disease," is a bowel trouble and that its cause and cure depend a great deal upon the diet. No doubt he is right, as most of the authorities recognize that these diseases begin when the weather is damp and chilly and the pollen or honey harvested is probably of poor quality. But when he suggests that

sugar feeding may be responsible for the disease, we believe he is mistaken, for we have seen the disease where the colonies had never been fed on syrup. We must hunt for the cause elsewhere. However, it is quite probable that sugar is not a desirable food for bees in any event and it should not be used whenever good honey is available.

Wastefulness and the High Cost of Living Versus Foulbrood

An editorial appeal against public and private wastefulness was published in the American Bee Journal for June, 1913, five years ago, when no one foresaw the dreadful destruction of human life and human products which is now taking place. Wastefulness and its connection with the possible spread of foulbrood were pointed out. But the urgent need of economy in all lines was not yet felt. The reprint of this editorial will give an interesting illustration of the progress achieved in this direction during the past 4 years, for much of the reform then suggested has been accomplished.

The writer one day noticed a little cluster of excited bees on the ground in a poultry enclosure. Upon examination, he discovered that they were bent upon gathering a lump of granulated honey, which had been thrown there with the other table waste. The chickens had eaten everything but the wasted honey, butter and bones.

We complain of the high cost of living and seek a remedy in every direction but the right one. The American way is to waste, waste in all directions. We wasted our forests, under the plea that it was more profitable to burn them off than to save them. We waste our coal at the mines, in many places, allowing the slack to consume itself by spontaneous combustion, or by

contact with the air. We waste our land, leaving innumerable spots uncultivated, even in the heart of civilization. We waste our manures, often even contaminating our streams by using them to wash away useful fertilizers. But above all things we waste our food.

This reproof is not intended for the foreigner who has been raised on economical methods in a thickly settled country. In all probability, the foreign-born American who reads this has been taught, in his young days, to consider bread and meat as **sacred** under the plausible plea that he might starve some day, for want of such food as he proposes to throw away, and also because so many millions in the world do not get as much as they want to eat. But our American education is different. Many a bright, neat, sensible and educated American mother thinks nothing of teaching her children to take a heaping plate-full of all kinds of food, leaving half of it unconsumed, in a disgusting heap, made of a mixture of all the dainty dishes served upon the table. Nay, in many cases, children are taught that it is **good manners** to accept or take more of one dish than you can possibly use and leave two-thirds of this upon your plate. Thus meat, gravy, bread, potatoes and other vegetables, fish, butter, jellies, pie and **honey** are carried to the back yard, or thrown into the slop-pail.

When this waste takes place upon the farm, it is but half wasted, for the hogs and chickens consume most of the remnants, so however expensive it may be to feed bread, cakes, jellies or honey to the hogs, the food is not altogether wasted. But what of the cities? How much of this willful and unnecessary waste is made to clog the sewers or sour and rot in the refuse can in the back lot?

What has this to do with bee culture? Why should a bee journal take notice of this bad custom and sound a note of warning? Because, as far as honey is concerned, the waste constitutes a danger. Because if one-fifth, or even only a tenth, of the honey served upon the tables is thrown away, there is a chance in many instances, of the bees getting at this second-hand, and bringing to the hive, with it, undesirable bacteria. The very best honey may contain in it germs which, **absolutely harmless to human beings**, mean ruin to the brood.

Why are brood diseases almost permanent around many large cities in this country, if it is not owing to the fact that some of the honey shipped from all parts of the country is, to a large extent, exposed where bees can reach it?

One will say that, in most cases, the honey is healthy for the bees and entirely free from germs. True. But we know that in a case of contamination, the microscopic germ which causes brood diseases is so small and so sparingly scattered in the honey that scientific examination has usually proven inadequate to find it. In other words, those germs of

bacilli, which are **entirely harmless to man**, are so infrequent in contaminated honey that a microscopic examination usually fails to detect them. But they are situated in the most favorable condition for development in the stomach of the larvæ.

Aside from the dangers arising through the wasting of honey and other foods, is it not time for civilization to take notice of the wanton loss which has thus far been considered fashionable and proper?

We dare say that, our country through, from one-tenth to one-fifth of all the food served upon our tables finds its way to the dung heap, untasted. Think of wasting 10 to 20 per cent of your food! How long would this amount support you in your old age?

This habit is not confined to the wealthy and well-to-do, but is noticeable even among the wage-workers, though in less degree. Neither is this any benefit to the housekeeper, for she has to prepare so much more food, and after each meal has an ugly mess to clean up, made of the neatest and finest morsels that she has artistically prepared. Aside from the high cost of living created by such an untidy habit, this alone ought to urge us to stop it.

Death of G. M. Doolittle

Marietta, N. Y., June 10, 1918.

Gilbert M. Doolittle died June 3 of heart failure. He was taken ill in church the day before. He was 72 years of age in April last. A widow survives him. No children.

P. G. CLARK.

G. M. Doolittle was one of the most experienced beekeepers in the United States. He was a subscriber of the American Bee Journal as early as 1870, and a contributor, more or less



G. M. DOOLITTLE

regularly, to this magazine and Gleanings from that time to this.

The greatest invention of Doolittle was his method of queen-rearing, explained in his book "Scientific Queen-rearing," published originally in 1888, with numerous later editions. We have explained, in this magazine, in May, 1917, how the method was brought about. In October, 1878, a beekeeper, by the name of Boyd, suggested, in Gleanings, the possibility of using old queen-cells, taken from almost any hive of bees, and placing in each of these a larva. Then A. I. Root suggested the use of a rounded stick wetted and dipped in beeswax

to make these acorn cups artificially. Doolittle put these suggestions together and also devised the rearing of queens in the upper story of a strong, queenright colony, by using a queen-excluder between the stories. This gave the basis for his system, now used all over the world. In France a description of the Doolittle method was published in 1902, by Giraud-Pabou, who was very successful with it. The Italians also brought it into prominence, and perhaps the most perfect establishment for the rearing of queens by the Doolittle method is that of Enrico Penna, of Bologna.

During the past few years Mr. Doolittle spent his entire time in the care of an invalid wife, who survives him and will miss him still more than the bee fraternity. For several years past Mr. and Mrs. P. G. Clark have been in charge of the Doolittle queen-rearing yards and apiaries.

Bibliography—The Bees and the Honey (Le Api E Il Miele.)

A book of 240 pages with the above title has just been published by Professor Giuseppe Montagano, of Rome. It is a treatise of modern beekeeping, containing useful advice and devoting an entire chapter to the transferring of bees from the old skep to movable frames.

The most interesting point of this book, to us, is the difference it establishes between the Italian bee (*apis ligustica*) and the Sicilian bee which the author names "*apis sicula*." He asserts that there is a visible difference between the two, the Sicilian worker bee being of more "ashy" color, while the queens are of chestnut color and the drones of a "dark-ashy color (*cenere scuro*). He holds that this race is still more peaceable than the Italian, though perhaps a little smaller. He advises the mixing of the two races, by introducing the Italian bee in Sicily.

In the October, 1915, number of the American Bee Journal, we introduced evidence that the only part of Italy where the Italian bee does not exist in its purity is the province of Liguria, south of the Ligurian Alps. So the name "Ligurian" is a misnomer. The name "Sicula" for the bees of Sicily is much better adapted to the race which it represents. It might be advisable to give those bees a trial in this country.

The author of the book does our editor the honor of publishing his photo, describing him as the editor of the "greatest bee periodical in the world." It is very flattering, and we hope to deserve it.



G. M. Doolittle, discussing beekeeping with Mr. and Mrs. Clark in the Doolittle & Clark queen-rearing apiary in 1916.

How to Get 2 Cents More for Honey

By Chilton Gano

IF honey producers could get 2 cents per pound more for their honey than at present, and still not have the consumer price advanced—in other words, if they could lower the cost of distribution that much—they would jump at the chance.

Well—they can do this!

The Texas honey producers did it, and it only took them six weeks. How they did it is no mystery. It was simply (to quote Kipling) "the everlasting teamwork of every bloom-in' soul."

Any group of honey producers in a fairly small territory can do the same thing.

The writer told the story of the Texas Honey Producers' first year of co-operative marketing in the May and June issues of the American Bee Journal. Now it is desired to "point the lesson" from their experience—to analyze what they did—get at the gist of it—grasp its principle—as an aid to other beekeepers in doing likewise.

Too often the mistake is made of reading such stories and then forgetting them—in one ear and out the other. This would be a **great** mistake, in the present case. It is probable that nothing so important and significant to the subject of honey-selling generally has happened in a long time.

Suppose we follow the "Before and After" method of summarizing what was done. The situation in Texas **before** co-operation will be seen to be exactly like the situation prevailing today in a score of honey-producing communities. The contrast with conditions **after** co-operation was adopted, will be found striking and will make it clear just how distributing methods were improved and their cost lessened.

Beekeepers who want to secure better prices and realize that better prices must be "earned"—that they won't just come for the wishing—are advised to thoroughly grasp the lesson of this article, then to study the two articles in May and June American Bee Journal, and, finally, to interest the beekeepers of their communities in the new and better method of selling honey.

Remember, that it only took the Texas producers six weeks to permanently advance honey prices 2 cents. That is inducement enough for any man. But here is another inducement: The new plan gave new life and new impetus to the Texas honey industry. Texas honey is now in demand, is paying everybody connected with it, its production is worth while, the producers have every reason to increase production to the utmost. **This is helping to win the war!** Anything that promotes production of a sugar substitute is helping to win the war.

Before Co-operation

Before co-operation in Texas the

situation was just like it is in any community where each farmer is his own salesman. Some of the producers were selling to speculators, some to jobber buyers, some direct to the wholesalers or retailers in nearby cities; some, perhaps, unsatisfied with prices procurable in these ways, were trying to sell direct to consumers of their community. There was no general understanding regarding what was a fair price for honey. Each producer got the best price he could. If he happened to feel blue or discouraged, or the buyer could make him feel so, he might sell at no profit whatever. Some even sold below cost without knowing it, having no correct idea of what it costs to produce honey.

It is thus seen that producers were inevitably underbidding each other in the markets. Such a condition benefits no one. When prices to the producer are unsatisfactory he has no incentive to put up a quality product, to pack it properly, or to take care of it during distribution. His business, being inadequately financed, is shabbily conducted. This brings honey on the market in an unattractive condition. It doesn't appeal to the trade or to the consumer. It can't compete in "looks" with the handsome products of big packers now featured in every grocery store. Farmers don't realize how many things sell because of their sanitary, clean-cut, appetizing "look."

Under these conditions honey didn't appeal to producers, trade or consumers. It isn't surprising that it was a drug on the market in July, 1916, selling at 5 cents for extracted and 7 cents for comb. These prices were born of ignorance and ruinous competition.

Again, grocers didn't want to handle it, because it was too much of a hit and miss proposition. You can't build up a regular consumer demand for a grocery product that sometimes you can get and sometimes you can't, and that varies in pack, color, price and flavor, every time you buy it. Grocers have been educated by the big manufacturers to where they like businesslike methods and standard products attractively packed.

After Co-operation

Nobody was satisfied. Then the wholesalers and retailers heard that the producers had waked up and were going to get together and mend matters. The trade don't usually welcome the news that producers want better prices, but this time was an exception to the rule. Honey was "N. G." as it was. It wasn't making money for anybody. The trade must have realized that the only way to get a presentable product was to give the producers fair prices.

News of the meetings of the beekeepers and their analysis got around. They believed they must have at least 2 cents a pound more for honey in order to deliver a good product. They agreed that such an advance was only fair—was only a "living wage." Well—the trade didn't "kick." Within six weeks after the producers had determined to organ-

ize, before they could have done very much except "talk" and "plan"—Texas honey was bringing the higher price. It just shows the salutary psychological effect on an industry when "teamwork" becomes the motto.

And the minute it became apparent that honey need no longer be a "beggar" in the markets, but was "worthy of its hire," there began to be an incentive to throw away its old clothes and "dress up." The Association set out at once to remedy all the defects in the old system of marketing honey.

One defect—a big one—had been the absence of standards. Honey grading rules were adopted that should be rigidly followed by all members of the Association. Today the grocer can no longer complain that he is unable to get the kind of honey his customers have been buying from him in the past and prefer. He orders by grade name, and if the honey doesn't meet the grade description, the Producers' Association makes good and penalizes the member who packed it.

Another defect had been absence of a guarantee by the producer to the consumer. Grocery products like Shredded Wheat, Heinz's Beans, Welch's Grape Juice, bear the maker's name and label, and this serves as a guarantee of quality. Somebody stands back of the product and says, "I packed this; if it isn't O. K., I'm ready to make it good." The Association adopted a brand and label, which is its guarantee to the customer that honey so branded is first-class and can be depended on.

Another defect had been too much handling of the product between producer and consumer. And this is highly important. In the case of both extracted and comb honey, rehandling costs money—and in the case of comb honey it also causes unnecessary leakage and breakage. The Association plan doesn't allow the jobber to handle the honey at all. The jobber does all of the other usual things. He gets the retailer's order, extends him credit if desired, and collects for the shipment. But he doesn't deliver the honey. It is shipped direct to the retailer by the producer, who acts under instructions from the Association's general manager, Mr. E. G. LeSturgeon. This one factor of direct shipments, saving leakage, breakage, rehandling charges, bookkeeping and storage, is no doubt alone saving more than the 2 cents per pound which was accorded the producer after six weeks under the new plan.

This article is intended merely to draw the broad, emphatic lesson from the experience of the new Texas organization—not to tell the whole story. As a matter of fact, the 2-cent advance was only the beginning of the savings and benefits secured by this Association, as may be learned by referring to the previous articles.

What the Texans did can be done by any beekeepers. One thing should be noted, however, Texas has

a new law authorizing the co-operative form of corporation. Many States now have such laws. They greatly facilitate the working out of co-operative marketing plans. The writer expects to discuss this subject in detail in his next article.

Chicago, Ill.

A Month in Florida

By the Editor

A month in Florida! Why, many beekeepers go to Florida for the entire winter!

This is true, but there are only a few hundred of them, and beekeepers who never went to Florida, and never will go there, can be counted by the thousands, so perhaps many of our subscribers will enjoy reading the experiences of a winter month spent in the South.

I will not mention our stop in St. Louis, or at Nashville. The winter was just ending there, for it was near the end of February, but there was still ice on the Mississippi, opposite our home, almost thick enough to cross on, while at Chattanooga, when we arrived there, the second day of our trip, the fruit trees were opening their buds. We visited the his-

torical spots celebrated as the headquarters of the Federal and Confederate armies on the hills back of the city, the camp at Chickamauga and Lookout Mountain, from the top of which we looked down 1,700 feet on the city and on the moccasin-shaped Tennessee River making a sharp bend at the foot of the mountain.

The following day, for we traveled only in the day time, we passed through Georgia and began to realize that we were reaching southern countries; the fruit trees were in full bloom, the peach trees being already out of bloom.

On the fourth day of our trip we left Jacksonville, Fla., which, by the way, we do not admire as a city, and traveled in a southwesterly direction. At noon we reached the country of oranges. The trees were in bloom and the odor of orange blossoms pervaded our car. The small saw palmetto that we had seen all the way from Southern Georgia, was now accompanied by the cabbage palmetto, a tall tree, and the landscape assumed a tropical appearance, but—what swamps! How much white sand throughout Georgia and Florida, a plain, flat country, covered mainly with small pines and live oaks, to

which hang the long festoons of southern moss.

In the evening we reached St. Petersburg and realized that we were indeed in a country of perpetual summer, for around the hotel all sorts of flowers were in full bloom. St. Petersburg has fine streets, delightful walks, a beautiful bay—Tampa Bay—good fishing. It is a city of tourists, one of the finest spots in which to spend the winter months. It rains there so little during the winter that the daily paper, the *Evening Independent*, is given free to its subscribers on every day of absence of sunshine. They say they had 56 such days in seven and a half years.

The white sand is the worst feature in this land of sunshine. Ordinary crops cannot grow. A joint grass stretches its stems, creeping over the ground like the legs of a spider, 30 or 40 feet in all directions, and makes a sort of network over the sand. Then leaves gather in this grass and, in the course of time it makes a little soil.

I hunted for beekeepers, as I do wherever I go. W. H. Plunkett, who lives in St. Petersburg, is a native of Florida and owns an apiary eight miles from the city, in one of the rare fertile spots of the country. He took me to it in his automobile. An apiary of some 50 colonies, hidden behind live oaks, cabbage and saw palmettos, and drooping moss on the trees, made a wonderfully wild looking sight. The bees were gathering a little honey, but the crop from palmetto blossoms had not yet begun. That is the main source near St. Petersburg.

Mr. J. J. Wilder, our well-known contributor, who spends his winters in Bradentown, only 30 miles from St. Petersburg by water, came to see us and urged us to visit the city in which he lived. We agreed. A few days later Mr. Wilder met us at the Bradentown landing, accompanied us to the hotel and the next morning brought half a dozen beekeepers with him with two automobiles, to welcome us and take us around. We were already aware of the hospitality of beekeepers in general. This was another evidence of it. Mr. J. R. Notestine, a northerner who has lived in Florida for five years, took us with him, his daughter driving, and together we visited the most interesting plantation in the country, the Atwood Grapefruit Ranch, across the Manatee River, near Palmetto, a farm of 170 acres of fine grapefruit trees about 20 years old, many of them still bending under the weight of fruit up to 5½ inches in diameter. They were picking the grapefruit and packing them in the warehouse, situated on the Manatee River, at the end of a private dock. We saw the washing of the grapefruit and the sorting and boxing. Their largest crop is 100,000 cases, or about 160,000 bushels.

They utilize bees in fertilizing the bloom and Mr. H. L. Christopher, an old and experienced beekeeper, keeps two apiaries there, in different parts of the orchard, at the request of Mr. A. H. Brown, the manager. We sam-



The Cabbage Palmettos make a fine avenue in their native soil.

pled the grapefruit, and Mrs. Dadant, who says that grapefruit is too sour for her taste, found them delicious. They had ripened on the trees, that is the secret. The bees had harvested some honey from grapefruit and orange blossoms and Mr. Christopher was expecting a crop from saw and cabbage palmetto bloom, which were budding and would bloom within a month. Mr. Christopher took out a comb of orange honey which another beekeeper, Mr. E. A. Reddout was kind enough to put up in a tin for us so that we could sample it at leisure.

A new thing to me in the apiary line was the raising of one end of the hive cover by inserting a quarter inch wedge under it. This is practiced by Mr. Christopher in his apiary. It gives ample ventilation during the crop and helps keep down swarming. The bees did not seem to use this opening for in-and-out flight, possibly because the broodnest was below.

The same afternoon we took a trip to Sarasota, with Mr. and Mrs. Wilder, who, by the way, is a charming lady, and their little daughter. Acres and acres of vegetables are grown in spots of fairly rich land along the way between the two cities. There is a great deal of enterprise in that neighborhood. A number of artesian wells are just being bored to irrigate the crops, for water is needed as much as fertilizers. Sarasota is a small place, but with a bright future. We visited the Sarasota Bee & Honey Company, managed by C. N. Biorseth, with his sons and son-in-law. Between them they care for a number of apiaries, some 500 or 600 colonies. Learning that we wanted to taste the honey of the locality, he brought us a 20-ounce jar of orange honey which had taken first premium at the county fair. This honey is fine, indeed.

Back to Bradentown in the evening, we made a call on the celebrated founder of the largest bee supply establishment in the world, Mr. A. I. Root. Mr. Root and his wife spend all their winters in Florida. We found Mr. Root bronzed like a southerner, but as hale and robust as a young man, in spite of his 78 or 79 years. He exhibited to us a much worn hoe and said that this hoe was the secret of his health, for he spent most of his time in the garden. He gave us an introduction to Mrs. Root, a charming old lady, whom I had never met, and made me the compliment of introducing me to her as the head of the strongest competitive firm the A. I. Root Company had ever found in their business. Mr. Root grows potatoes and beans mainly in his garden and said that he had sold \$100 worth of new potatoes by March 23, a feat that surely no one else in the entire United States has done so early.

We had seen tomatoes and corn in bloom in Sarasota, but the only vegetable crops offered on the markets thus far were lettuce, radishes, carrots, cabbage, etc.

We were disappointed in the surroundings of the Root home. That spot seemed to have suffered more from frosts than any other that we

saw. The orange trees, the shrubbery and even some of the shade trees had suffered as if a fire had blown over them. It made a desolate looking sight. It was the same at the Wilder home, a few blocks away. These homes are a mile or so from the business part of Bradentown. The growers of oranges keep off the frosts with smudge on cold nights.

Returning to St. Petersburg, we remained there until the latter part of March, spending a part of our time fishing on the bay. Fish are plentiful and those who are fond of the sport can readily catch more fish than they can eat.

During our stay in Florida we saw many lean cows and very few healthy looking cattle. As milk is high, wife remarked, "Why don't they feed their cows better?" But the answer came, "It is not the lack of food, it is the tick that keeps them thin." Then we were told that to keep cows free from ticks in this warm country, it is necessary to dip them every two weeks in a bug-killing solution. Some large cattle growers keep a tank of medicated water through which the cattle are regularly driven. That is the only way in which they can keep it away. But aside from the ticks there are

other drawbacks to cattle raising. For instance, sandburs (*Cenchrus carolinianus*) are everywhere present in the grass, not only in the country but even in the city yards, and one can imagine the difficulty for grass-eating animals.

Inquisitive friends want me to give here my opinion of Florida as a honey-producing State. I do not think that I can add anything or change anything concerning this subject, as it was treated by J. J. Wilder in the April number, page 122. If you wish to try Florida for bees, investigate for yourselves, as there are good and bad locations. Mr. C. C. Cook, located at Tasmania, a new town, close to the famous Lake Okeechobee, on the west of it, in a country that I thought entirely uninhabited, told me of the most wonderful crops and swarming that I had ever heard and sent me some delicious gallberry honey from that vicinity. It is almost as white as clover, but a little strong in flavor.

There are unexpected possibilities in Florida. It was on the east coast that our departed friend, the veteran apiarist O. O. Poppleton harvested his immense crops. But the main attractions of Florida are its wonderful winter sunshine, its wild tropical



The "kiddies" beneath a hibiscus on a Florida lawn in February.

scenery, its immense fishing and boating resources. Between the numerous "keys" and the main shores, the weather is balmy, the air is pure and one can forget there the rest of the world and its troubles.

Treatment of European Foulbrood

By W. S. Pangburn

Read before the students of the Short Course at Ames.

THE subject of European foulbrood is a very important one to the beekeeper. I think I am safe in saying that it is the most important subject with which we have to deal at the present time.

Formerly, the producing of a maximum crop of honey, and disposing of it to the best advantage, were the two subjects that deserved our most careful attention.

Shortly after the European war began, the selling of honey became the least of the beekeeper's troubles, and will be so long as it lasts.

Producing maximum crops is still a vital question, owing to the fact that European foulbrood is ravaging the apiaries in many spots, and maximum crops are not produced in localities where it exists.

It matters not whether you have had the disease, whether you now have it, or whether you have never had it. It is a menace to the industry so long as it exists, for one never knows when or where it will break out, either for the first time, or anew.

I do not know of a man who would make the statement that he knew all about the ways the disease was transmitted, and could give a treatment that would cure it to stay cured.

It is true, there are a number of treatments that will clean up the disease for the season, but no assurance for the next year.

It seems also to be true, that some methods are a success in some localities and a failure in others. Why this is so is not entirely clear.



J. J. Wilder taking recreation at his Florida home

In my own opinion, the disease is not so virulent in some localities as in others, else it would seem that if a treatment had merit in one locality it should work in another, but we know it is not always the case. For instance, about the time the disease broke out in my own yard, Dr. Miller wrote an article for the American Bee Journal, with the head lines "European Foulbrood at Dr. Miller's." In this article he gave three different methods that he had used with success, two of which I tried, with little success.

Mr. Holtermann, of Canada, tried his methods, also Wesley Foster, of Colorado; that is, caging the queen for ten days and then releasing her on the same set of combs.

Mr. Foster came out with an article condemning the plan as not successful with him. His opinion was identical with mine, that the disease reappeared in far too many cases to be relied upon.

I also found that a queen caged in the height of egg-laying for ten days was, in most cases, quite as poor as

a dead one. I have not been the only beekeeper that has found this true.

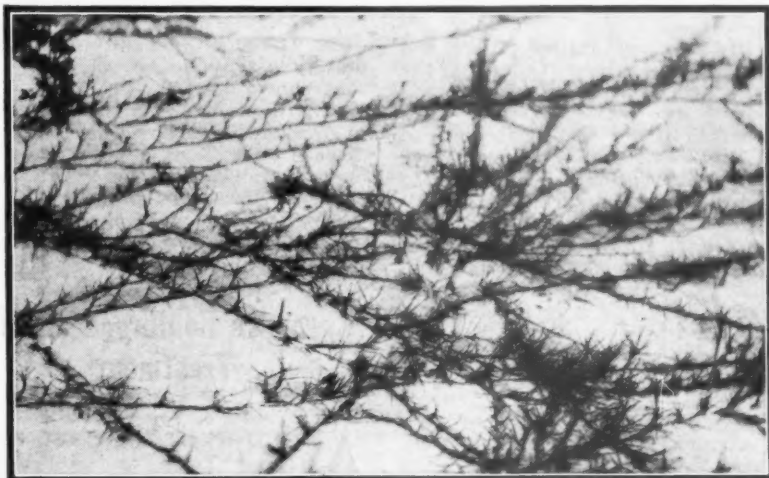
Mr. Holtermann, in the American Bee Journal, said he could not help but think that Dr. Miller had the disease in a very mild form to yield to this treatment, and I thought so too. Later I learned something that verified that opinion. It was that Dr. Miller had the disease in his yard for three years before he knew that he had it, and I am quite sure that if the disease had been as virulent as it was in my yard, he would have realized before three years that he had **something**, else he would have had no bees. I am satisfied that two years, without treating, would have put us out of the bee business.

This statement is not given with any intent of belittling Dr. Miller, because I have not the slightest doubt that the methods he described were a success with him. But the idea I wish to convey is that the same treatment will not always work in different localities, and also that the disease seems more virulent in some places than others.

I fully realize that it is a very hard matter to outline a treatment that will suit any and all conditions. We do not always follow the same line ourselves in all cases. There are many things to be considered, such as the man, honey flow, weather conditions, the time of year the disease appears, the condition of the bees, etc. So it is only possible to outline the main points.

First, if you have never reared any queens, you should learn how at once. Any beekeeper should know enough about queen rearing to rear his or her own queens, as a young queen from a good vigorous strain of Italian bees is the "sine qua non" in cleaning up the disease.

When you find a colony in your yard is resisting the disease, naturally you will want to breed from that



The Joint Grass creeps over the white sands of Florida, taking root every two inches, and resembling a spider.

queen, and if you cannot rear your own queens, how are you to do it?

While most any strain of Italians would be better than hybrids, if they were not inbred bees, simply because they are Italians does not spell success in cleaning up foulbrood. That there are strains of Italians that are more immune to the disease than others, there seems to be but little doubt.

When you find a queen that has gone through an epidemic of European foulbrood with no sign of the disease, spot her for your breeding queen. You may get fooled on her the following year, but keep on trying until you do find one, then rear your cells from her. But do not make the mistake I did once and get so struck on a queen as to practice inbreeding and have it to do over again.

N. E. France says inbred bees will succumb to the disease fully as quickly as hybrids, and I found it true. Use at least two strains in your yard to avoid this, and more would be better.

If you will paste these last remarks in your hat, and work along these lines you will be on the road to success.

As soon as you are aware of the presence of foulbrood in your apiary, or in your locality, examine every colony carefully, and at least once a week after. Cage or kill the queen in all diseased colonies **immediately**, not the next week. The longer you leave her free to lay after the first diseased larva appears, the more disease you will have to clean up. You will be surprised, if you have never had any experience with the disease, to know how bad they will get in a week's time if left to themselves.

After going through the yard and marking all colonies diseased, also the strong and the weak ones, unite the weak colonies until they are strong, even if it takes 3 or 4 piled up to make them so. You are cutting down the number of cases to be treated, saving money for queens if you have to buy, and lessening the chance of infection to healthy colonies. You will not need to save any for experimental purposes, for in all probability you will have plenty of them before the season is over.

You should not expect a weak colony to clean up even under the most favorable circumstances. So do not try it, as it will be time worse than wasted. In ten days or two weeks (depending on circumstances) you will be ready for the cells from your breeding queen, if you have one, else young queens from some good breeder, which should have been ordered previously to introduce to these colonies that have had their queens removed.

In our own yard we figure on using ripe cells to graft at this time, as we have better success with them than with queens, and if we have plenty of cells we do not always wait ten days before we graft, because it is some days before the young queen begins to lay.

I might explain more fully as to why we prefer the cells to queens. It

sometimes happens that in stacking up colonies a queen cell is overlooked at the time of cutting, and while a very small per cent of queen cells hatch from a foulbroody colony, it does sometimes happen, and you have a virgin running somewhere in the hive bodies. Even though there is no virgin in the hive, a colony that has been without a queen for ten days or longer is the hardest kind of a colony in which to introduce a queen, as any good beekeeper knows.

If you are paying a dollar apiece for your queens, and this virgin is not found before you introduce your queen, you have lost your dollar, and this might happen often enough with the novice to make a very dear colony of bees.

If you graft a cell and the cell is O. K. after 24 hours, you are safe in thinking they have no queen. If the cell is destroyed, you can thank yourself that it was your cell instead of the dollar queen.

If we are using queens from some breeder, and are ready to introduce them, and the bees have not cleaned out the dead larva, we aim to shake them from the diseased combs onto clean ones, in a clean hive. We have at times in our yard several colonies which we call hospital colonies, and we give the diseased combs to these colonies to be treated later. This lessens the chance of disease breaking out the second time, and the process of cleaning up repeated, which should be avoided if possible, as, if you don't watch out, the summer will be gone, the harvest ended, and your colony not saved.

If the disease appears in your apiary early in the season, before many young bees are hatched, and your colony has had no chance to make up for winter mortality, with perhaps cold, damp weather, and no flow, you have about the worst condition imaginable to fight European foulbrood. The fact is you can't fight it until conditions change. Robbers are bad at these times, making examinations exceedingly difficult, and with these conditions, if you are not a first-class beekeeper, you will probably spread more disease than you stamp out.

When fruit bloom is out and the bees are busy gathering pollen and honey, is the proper time for the average beekeeper to commence operations. But waste no time when the conditions are such that you can work, and remember, you must have a flow, either natural or artificial, to accomplish anything in fighting foulbrood.

If you have followed the outline of treatment I have described as thoroughly as you should, the apiary should be in a fair way to clean up, and by having some swarms at this time, you can boost it in the way that I shall now describe.

You will, in all probability, unite some swarms, which will cut down your number, and to follow this up without any increase, you soon would be out of bees. I think I hear someone saying, I could start nuclei and increase without natural swarm-

ing. I can only say, you might, and you might not. Remember, you now have European foulbrood, and nothing but strong colonies should be tolerated in the yard. You should allow no robbing now. If you do, likely enough your summer's work will come to naught. Personally I do not want any nuclei to bother me as long as I know foulbrood is close by.

When a colony swarms, the queen is picked up at the entrance, as we always clip our queens. The old hive is removed from its stand and the new hive with a clean set of combs in its stead, a queen excluder on top of that, then the supers from the old colony, with the caged queen at the entrance.

The brood from the colony that has swarmed is examined closely for any disease. If it shows no disease, it is put on a stand and left to rear its own queen, and perhaps a bunch of nice cells that can be used to good advantage at this time. If it shows any trace of disease it is stacked over some colony that has been treated previously, and has not yet a queen; **never** over a colony with a laying queen. In a few days the young bees from the hatching brood will give the colony a boost that it badly needs, and there is nothing like young bees to clean out the diseased combs, as it is in their line of business.

We never aim to allow a queen cell to hatch from a queen that shows disease. This plan is followed as long as we have swarms and colonies that need help. It is no serious setback to the colony that swarms, and it is a decided boost to those colonies that contracted the disease and had their queens removed, and soon puts the whole apiary in condition to gather honey and strengthen up for fall.

In summing up, there are 8 points I would like you to remember:

- 1st. Learn to rear your own queens.
- 2nd. Remember that a young queen from a vigorous strain of Italians will come nearer to cleaning up the disease than any other thing.
- 3d. Do not inbreed your bees.
- 4th. Italianize with a good resisting strain of bees before you get European foulbrood.
- 5th. Cage or kill the queen **immediately** after finding the first cell that shows disease.
- 6th. Examine your bees at least once a week after you are aware the disease is present in your own yard, or in your neighbor's.
- 7th. Allow no robbing.
- 8th. Do not treat a weak colony for foulbrood. You will not succeed.

Center Junction, Iowa.

European Foulbrood and Its Treatment

By C. C. Miller

A GOOD friend, who knows a lot about bees, and for whose opinions I have the highest respect, has written me a few words about my theory as to the way in

which European foulbrood is continued and spread in a colony into which the disease has been introduced, and also as to its treatment. The theory is this: If you cut or crush bee-larvæ, the workers eagerly devour the juices; when a colony is brought to the point of starvation the bees tear open the larvæ, suck their juices, and throw out the white skins. Similarly, when the miscreant of European foulbrood (*bacillus pluton*), gets in its work upon a larva, and while the juices of the larva are still palatable, they are consumed by the nurses and fed to healthy larvæ. These become diseased, and in turn their juices are fed to other larvæ, and so the work goes merrily on. But the time is limited in which the juices of an infected larva are sufficiently palatable to be consumed, and as soon as sufficiently offensive they are no longer sucked up by the nurses. So if the laying eggs, and the consequent rearing of brood, be broken in upon for a sufficient time, there will cease to be in the hive the diseased larvæ of the right age to be consumed, larvæ coming into existence subsequently will not be fed infected matter, and a cure will result.

My friend says: "The question which I would like very much to have you or someone else answer is, how in the world does European foulbrood ever appear the next spring if the method of transmittal is through the eating of freshly dead larvæ? There must be some other way, probably through the eating of infected honey, and yet when we know how readily a colony can get along with honey from affected colonies, if the colony getting the honey is good and strong and of vigorous stock, this hardly seems credible."

I can easily see how this objection might seem insurmountable, for one might say, "If cessation of egg-laying for 10 days proves a cure, then after a cessation of months, as in winter, surely there should be no question as to a cure, and yet, we know when spring arrives business opens at the same old stand."

I am not certain that I can give a satisfactory reply to this, yet reply is not utterly lacking. Although nearly all cases of transmittal may be in the way I have indicated, yet that is not the only way, and my friend is quite right in saying, "There must be some other way." That other way may be through the introduction—I think we might say the accidental introduction—of a spore; for in a way the usual introduction is not accidental, but intentional, at least so far intentional that it is the intention of the nurse-bee to feed the infected juices, whereas there is never any intention to feed the dried spores. It is to be remembered that in a colony, or in an apiary, where European foulbrood has existed for even a few weeks, these spores, or dried seeds, abound by the million. They are scattered over the combs and in the cells, on the floor and at the entrance, and all over the ground for a distance of rods. Is it

any wonder that now and again one of these spores, possibly sticking to the toe of one of the nurses, should accidentally fall into some baby's porridge and make a start of the disease? Take a bad case in the fall, where multiplied millions of spores are all through the hive, the bees too discouraged to clean up, and is it at all strange that the following spring a few spores should find their way into the food of the larvæ? In line with this, you will probably find that early in the spring the case is not nearly so bad as it was the previous fall; indeed, you may not detect it at all until June. This accidental swallowing of a spore by some baby may account for the fact that after a cure has seemed complete the disease may turn up again in the future.

Now, my friend, I'm not sure that this answer to your question will satisfy you, and to tell the truth, it doesn't fully satisfy me. By any sort of reasoning I can use, it seems to me it ought to be the rule that the cessation of brood-rearing for the winter should at least generally result in a cure, and it doesn't. To be sure, I suspect that if close watch were kept it would be found that cases of over-winter cure are not altogether wanting. But the explanation I give is the very best I can do, even to accommodate so good a friend as you. If you can offer a better, I'll gladly accept it, or if you'll offer a theory more easily accordant with all the facts, I'll drop mine like a hot potato.

You further say, "You state that you do not find dead larvæ after they have been dead long enough. I am wondering whether three or four days might not be just as good as ten, if the condition of the larva was the determining factor." What a revolutionist you are! Of course, you know that I was trying to follow the Alexander treatment, and by mere blunder made the time of queenlessness shorter than he. His plan was to have the colony without egg-laying 27 days, and he was very emphatic that it should be "not a day less." I was criticised very severely for my presumption in cutting down from 27 days to 16, and now you come suggesting 3 or 4! Well, between you and me, I was never very sure about that 10 days, but 10 is a round number, and I wanted to be on the safe side. As to cutting down still further, suppose we figure a little. The larvæ are fed during a period of 5 days; so if we should stop egg-laying for 5 days it would seem it might stop the continuance of the disease. But is a larva effective as a disease-carrier at any time of its 5 days' existence? I don't know. I doubt. It may be fed infected pap the minute it hatches from the egg, but that doesn't immediately kill it. It may be, for anything I know, 2 or 3 days before it gets to the point where the nurses tear it open and suck its juices. Indeed we know that some do not reach that point before they are sealed over. So it is possible that no larva is torn open until it is 2 or 3

days old; in other words, it is effective as a disease-carrier during only the last 2 or 3 days of its larval existence. In that case it might not be very hard to grant your 3 or 4 days of egglessness.

Here's something that seems to me corroborative. Some have reported the curing of European foulbrood by merely changing queens. At least this treatment was successful in nearly all cases. Now, when a laying queen is removed and a new one is introduced, there is a break in egg-laying, which may be 2 or 3 days. I suspect it was the break in egg-laying rather than the change in queens that made the cure, and if that short break was successful in these cases, why not as short a break in general?

Of course, in so short a treatment the dead larvæ will not all be cleaned out; plenty of black ones more or less dried up will be found in the cells; but the bees will not eat them, and so they will not continue the disease. It's the big yellow fellows that count; if none of them are found present we may say, "It's a cure," no matter how many black larvæ are present. To be sure, there's always the possibility that a spore from some black larva may accidentally get into baby's dinner, but that's exceptional.

Even supposing a treatment of 27 days—or even 10 days—should be always successful, and that not more than 9 out of 10 cases should be successful with 3 or 4 days' treatment, I'm not sure but I should prefer the shorter treatment. For would not the gain in brood more than repay the few cases needing to be treated over again?

Some have reported success by merely putting the brood of a diseased colony, together with adhering bees, in an upper story, leaving the queen upon foundation or empty combs in the lower story, under an excluder. This may be accounted for by saying that nurse-bees are not inclined to travel far on the combs, and so do not go from the upper to the lower story to carry the disease. This may well be true, for when a colony is first attacked by the disease it will be found confined to one comb for some time, perhaps a week.

I've tried to answer as best I could; here's a question I leave you to answer. Once in a while a case will be found, not very bad, and without anything being done for it a later examination will show that the disease will have disappeared. On what sort of theory will you explain that?

Let me give you another item. You may know that during my first experience with European foulbrood I treated it the same as American. I assembled the diseased brood from all over the yard and piled them on top of one of the diseased colonies, several stories high, intending to treat this colony after the brood in the upper stories had emerged. After some three weeks I lifted off the upper stories and opened the brood-chamber with no little interest to see what I should find after an ag-

gregation of so much foulness. To my surprise, I found the disease was gone, not a yellow fellow left, and, so far as I remember, the disease did not show up again in that colony. Why? Did the developing of such an immense force of young bees have anything to do with the case?

Marengo, Ill.

After having written the foregoing article, I sent my friend a copy of it. As soon as he could he wrote back telling me that (*bacillus pluton*) doesn't have any spores, intimating an easy way for me to make correction in my article before it got into print, so as not to expose my ignorance. I think, however, that I'll make no correction. Exposure may be good for me, for the fact is that I supposed no bacillus was ever so thoughtless as to be without its spore, and perhaps I ought to be more careful as to writing about things concerning which I know so little. So, instead of making any correction, I'll let you make your own corrections, after reading Dr. Phillips' letter, in which I am sure you will be interested.

C. C. MILLER.

Washington, D. C., May 25, 1918.

Dear Mr. Miller:

Your interesting article, prepared for the American Bee Journal was received while I was on the road. Our Mr. Sturdevant took it with him to Ithaca, N. Y., where he is to work on European foulbrood for a while and where I met him to help arrange some of the details. We went over the article together, and now I have brought it home to acknowledge its receipt. This will explain the delay.

There are one or two comments, one especially important, and which I think you will want to use as the basis of a change in your American Bee Journal copy.

You refer several times to spores, while (*bacillus pluton*) does not form spores. This fact upsets things a bit, for it makes it all the harder to understand how the bacilli live over winter. However, you can simply change the word "spore" to "bacterium" and not materially change the sense. We do not know how the vegetative bacilli can live over winter, and, since they cannot be grown on any bacteriological medium, it is difficult to get light.

You also speak of a "bad case in the fall," but such a case is as scarce as hen's teeth. We have had samples here every month in the year, but after July it is usually dried material.

You could be more definite on over-winter cures, for they are not rare. In other words, when the disease disappears in July, if conditions are right for preventing the disease, it frequently never reappears.

I believe I told you that my father's little apiary was 100% European foulbrood in 1915, when I went out in June. I showed my brother how to shake on drawn combs (my second plan of treatment.) He introduced Italians and (most important of all) he built winter cases. No dis-

ease has been seen in the apiary since, but the region is full of it. I examined the apiary one week ago today and the colonies average brood in 15 frames. I have an idea that the folks at home will not experience a sugar shortage this year. A few colonies now have mated queens and I hope to get out home and requenee these in August.

E. F. PHILLIPS.

Beekeeping in Jerusalem

(Concluded from June)

By Ph. J. Baldensperger

THE garden and thicket near the slopes of Moriah and up to the slaughtering place in the open on Mt. Zion were then a diminutive bee paradise. I found an ample collection of honey-plants all about the fields, in the hedges, on the ruins of crumbling houses, and often the city walls were lined with them on the inside—for seen from the exterior the walls are perfectly clean except near the tower of Hippicus, and the Jaffa gate dating, no doubt, from before the final fall of Jerusalem under Titus.

Broad-beans (*fava*), a favorite plant with orientals for kitchen use, were largely cultivated in early spring and gave plenty of honey and some pollen. The dried stalks and leaves are excellent food for camels and cattle.

Cactus hedges, originally planted to hedge in the fields, had become the principal plants in some fields there. The big yellow and orange flowers give an excellent honey in May, as well as plenty of pollen for rearing brood. Camels feed on the tender leaves, and the impenetrable thickets were shelters of generations of dogs—the hygienic police of ori-

ental towns—where refuse is continually thrown into the streets and hardly ever swept. Hygienic principles have certainly been applied since the Allies under General Allenby have once more delivered Jerusalem from the hands of the Turks.

Dandelions, marigold, mignonettes and one or two borages grow all about the vacant spaces and bees hum on them gaily.

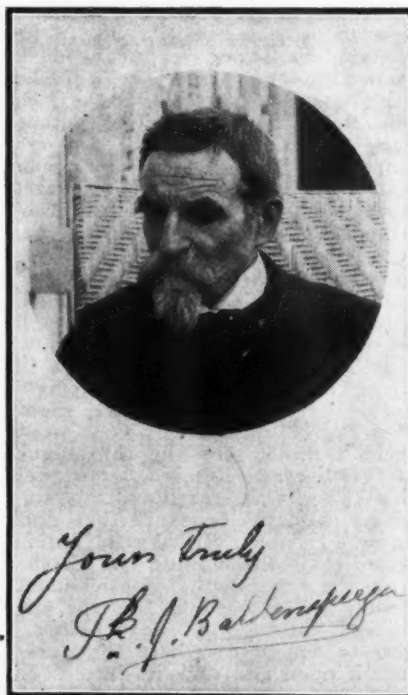
Big mignonette, as well as mustard, seemed at home in the walls, and great shrubs of capers (*Capparis spinosis*) carpeted the walls, and the graceful white flowers invited bees. Some authors thought this plant the hysop of Scriptures. Henbane (*Hyoscyamus niger*) and Horehound (*Marubium vulgare*) grew about the wrecks of old buildings and the honey of the latter plant was so agreeable that we called it Rah-el-halcome, as resembling in flavor the "Turkish delights," a sugar pastry usually prepared in Damascus.

Select cauliflowers grow all about the dung hills of Zion and Moriah, and the "fellahin" choose the best plants for seed; the immense bushes give much honey in autumn. Except for these last, all above-named honey-plants could be classified as swarm-preparing flowers, according to the prevailing east or west winds. The hives were usually in good shape for the best honey-plants in June and July.

Wherever the bees could reach the luxuriant thyme fields, which throve around the town, they made a splendid harvest. Our Nahale used to say that the thyme gave the best honey to seal the combs and then it was time to take out the crop. It is identical with the renowned Hymettus honey of ancient history. The most progressive of Judean kings, Herod the Great, had apiaries around his private estates, in his paradises of Ain-Rimmon and Herodium (a desolate paradise now), and Jericho. He used to send honey to the Roman court, and since then Jericho honey was greatly demanded by the Roman emperors. Cleopatra received the beautiful estate of Jericho with its select plants and hives and enjoyed them for some time.

The "fellahat" (peasant women) of Siloam and El Tur (Mount of Olives) almost exterminated the magnificent thyme bushes all around the town to use as fuel and for culinary purposes. They prepared their bundles and carried them home on their heads as if they were great wheels higher and broader than themselves. We used to admire their dexterity with their immense load, in perfect equilibrium as they toiled up the hills of Zion towards their villages. They sang in unison or chattered as if they were picnickers. Their assiduity in plucking up the precious bee-plant has rendered beekeeping almost useless between the walls and the road leading all around the town. There was originally a broad and deep ditch sometimes over a hundred feet wide. The ditch has partly disappeared.

From the Jaffa gate to the corner of Tancred's heights on the west, the



Ph. J. Baldensperger, who is writing for us a series of articles on Beekeeping in the Holy Land.

Greeks and Armenians had buildings and olive yards. Around the Jaffa gate and the Tower of Hippicus a deep ditch with a luxurious growth of honey-plants embellished this part, at least from the bees' point of view. From Tancred's Heights (the part whence Jerusalem was stormed in 1099 A. D.) to the Forth of the Storks, the ditch was in good condition and afforded plenty of food for birds and beasts.

As carcasses were thrown in, dogs, ravens and vultures found food by day; jackals and hyenas carried off what they could by night. The land was manured and gave plenty of honey-plants. Skeletons were left to bleach in the sun forever. From Stephen's Gate to the corner of Moriah the ditch was transformed into a Moslem cemetery, where they repose near their sanctuary till Judgment Day. Olive trees grow on the slopes toward the Cedron, and innumerable squills (*Scilla maritima*) grow around the Moslem and Jewish cemeteries beyond Cedron.

Squills begin to bloom about the 15th of August, a sign, our Nahale used to say, that the Nile in far away Egypt was overflowing. The flower stalks are much visited by bees and they carry home quantities of white pollen.

From Moriah to Zion and around to the Tower of Hippicus the ditches have been filled up with city refuse, carried out through ages. Centuries of continued heaping up in the ditches has lowered the road on the south side, and often the road resembles a trench of which the walls are piled rubbish. The big, slanting rampart below the Tower of Hippicus, sometimes called "David's Tower," was full of bee-plants, the bottom of the ditch was overgrown with cactus hedges, which gave plenty of bee forage in spring, and prickly pears at the service of whoever could reach them.

Common marjoram (*Origanum vulgare*), as well as different species of peppermint, grew here and there. Not only the bees found food there,

but the natives used the leaves of the Traatar, the first-named aromatic plant, which they dried in the sun, crushed and ate as a condiment with their bread. The stout shrubs of Pistachio had never time to grow very high, as they were cut down every year, yet the bees found an odoriferous, resinous matter for use in their hives.

How we envied the Tapji (artilleryman) when he was seen in the midst of the tropical flora, cutting down with his sharp sickles big bunches of rose-colored antirrhinum purpureum. I saw later that the big flowers containing honey for more than one bee each were never utilized by the domestic honeybee. The big blue-black giant bees, the wood bee, bit the flower open at the base of the calix and pumped out the nectar in this original way. Bumblebees of different kinds also sucked at the deep-calix flowers.

In Jerusalem, as elsewhere, I found in later years that almost all native beekeepers distinguished two very different kinds of bees, one very gentle, the other furious. In Egypt they called the furious kind Shami, or Syrian bees, and the gentler kind Baladi, or native bees. Egyptians are, as a rule, more submissive than the wilder, indigent Syrians. The same must hold true of their bees.

Nahale, as well as others of his school, assured us that there were two very distinct kinds in Palestine—the Harthi (agricultural or ploughing bee), were the more infuriated, and the Malki (possessing or royal bees). The Fellahin are considered less civilized and are warlike, whilst the upper classes in towns were gentler and submitted to royal laws.

The Harthi build long combs like furrows made by the plow, from the back to the flying hole, while the Malki made beautiful circular combs like full moons, said Nahale. When he examined the latter bees he blew them back with the tiniest whiff of smoke and he could take out the honey without receiving a single sting. Not so with the Harthi; all

their combs ended at the back, and he had all the streets filled with bees. They were managed with great difficulty, as every modern beekeeper understands, and this haphazard building made them a new race. Even here in France, I often heard amateurs talk of a furious and a gentle kind of bees, and they were astonished after having warned me of the fact, to see me manipulate the furies just as easily as the gentle ones. Most such persons cannot understand the secret, which lies wholly in the quality of smoker, or also, very often, in the harsh hands of the beekeeper himself.

Harthi and Malki bees were as busy carrying honey to their hives in spring, when rain did not fall, one as the other; both suffered equally from drought when the drying winds from the east or south left no parcel of moisture in the nectaries, and the odoriferous thyme bushes were almost burned by the fierce sun.

Nahale would usually come out to Zion's school, where he had the bees, on or about the 15th of August, which, according to the Catholic church, is the Ascension Day of the Virgin Mary. But Nahale was a stout Moslem, and I often asked myself how he adhered to a Christian date.

The overflow of the Nile, at least the springing up of the high stems of the squills; the feast of Paphos in Cyprus, to the feast of the virgin; the worship of the Judaites in the days of Jeremiah, to another regina or queen of heaven; the wax offerings to Ceres in Greece; the offerings of first fruit to Demeter in Sicily, or to Derketo at Jaffa, before Hebrew history—all of them point out to the same origin, with almost the same ceremonies, with products of the honeybee as principal offerings.

No wonder that Nahale, who knew Miriam el Bathul, that Shpeta, an orthodox Greek Christian who knew El Adra Miriam, all respected the same person in the same place at the exact season as it had been practiced for many thousand years, though giving different names.

Harthi and Malki bees were forgotten as well as Ceres, Ashthoreth or Adra, for on the 15th day of August it was honey day, and the beautiful combs, thick with thyme honey, drew out one Masha Allah (What God hath granted) after the other. Sober in words, Nahale did not say much more, but Shpeta in Ramler told me that the image of the Adra, or of her hands were perfectly acknowledged in the honey-combs. A prior of the Greek convent explained how the objects of value were found in the day that she came out of the sea—evidently she was Ceres, but christened Mary.

Our neighbor across Hinnom el Asalli was a wealthy descendant of the honey man who gave his name to a street in Jerusalem.

He had gathered his wealth by selling Asall (honey) taken from the apiaries which were built against the high city walls of Zion.



Jerusalem on the west side. at the left, the valley; in the center, Notre Dame de France, near Tancred's Heights; at the right, the Tower of Hippicus; the town walls in the foreground.

Honey was given to us at breakfast when we were infants in Jerusalem, and we have not yet become tired of it, but take it once or twice daily now, and the grown-up girls enjoy it greatly.

Nice, France.

An Open Letter to F. Dundas Todd

By A. C. Ames

I HAVE carefully read your article in May issue of American Bee Journal. As you used my name, I feel free to reply to you. However, you placed me in Iowa, which is an error. I have been on the apiary inspection force of this State (Ohio) for five years.

I believe, Mr. Todd, if you were on the inspection force of some of our eastern States you would have a different idea in regard to the handling of the bee diseases than you have. One of the few things that are established in bee culture is that different localities require different methods of management.

Your method of treatment, or rather eradication of bee diseases, will be successful if you do not have the following conditions to contend with. In a State the size of Ohio it would take one hundred to one hundred and fifty men working the entire summer to inspect every colony in the State. You will admit that it is necessary to have trained men for this work. Where are we to get the men? We have trouble obtaining satisfactory men with only three on the force. Is there any State in the United States or Province of Canada that will furnish one to two hundred thousand dollars to do this work, and continue it one year after another? No. The beekeeping industry is not important enough to justify such an expenditure. We, of course, do not consider beekeeping of minor importance, but the general public does, and it does not compare with other things agricultural—either in value of output, number of men employed or of capital invested.

Another thing—what are you going to do with bees that cannot be reached? I believe you will admit that there is no difference between our so-called domesticated bees and wild bees. I believe there are as many bees in trees, houses, etc., in Ohio, as there are in hives. I know of one wood lot of 2½ acres that was cleared and contained thirty-five bee trees.

This probably is an exception, but with careful search I feel certain that bee trees can be found in nearly every wood lot in Ohio. Bee trees harbor disease—I have found it there, and have had beekeepers that I have made clean up prove it to me and ask me: "What are you going to do about it?"

Another thing—you have no large cities in your territory, or at least none that receive honey from all

points of the compass. Around all our large cities, such as Cleveland, Cincinnati, Toledo, Columbus, etc., we have continual outbreaks of disease. Why? Because the empty sections and containers are thrown out and bees usually clean them up. That is well and good, but if the honey came from a diseased apiary, what then? You would soon have every beekeeper in or near our cities burned out of business.

We in Ohio do make an honest effort to compel our queen-breeders to keep their yards free from disease, and, what is more, we usually succeed. Our queen-breeders never know when to expect us, and they also know that if we find disease they will be placed under a rigid quarantine. That is not a nice position to be placed in—with orders to be filled and general queen-breeding operations under way. When this happens it usually makes a break that pretty nearly spoils a breeder's whole season. As a result, our breeders are careful. To do them justice, however, I believe they would be careful anyhow from a business point of view. They are a pretty good sort of men.

Now, I want to tell you about my own yards. In 1916 I had the worst attack of adult bee-trouble I ever saw. What it was I do not know. Dr. Phillips, E. R. Root, Mr. Bocock from England and others visited my apiary. None could offer any real advice. All, however, advised to re-queen, which I did. The disease gradually abated and by late fall very little could be found. It cost me several thousand pounds of honey, but as a result of the re-queening I had all my bees in good condition for 1917. I, however, raised my queens from an Italian strain that was not resistant to European foulbrood. I did not give this disease any thought, because, so far as I knew, there was none of it nearer than fifty miles. Imagine my surprise to find European foulbrood late in May, 1917. This required re-queening again, and a careful watching of the brood-chambers. When I first discovered this disease I found three cases at home and two at the outyard. Over 50 per cent of my bees were diseased at some time or another through the season. I re-queened everything, but I took 100 pounds average extracted honey, although the season was generally considered a failure. You do not state as to your method of handling European foulbrood, but if you handled it as you do the American you would have to inspect the diseased yard every few weeks all summer, and you would make no headway, for it can only be controlled by a resistant strain.

Many of our best beekeepers in both Canada and the States consider it a greater plague than the American.

This spring I have 130 colonies in the best condition I have ever seen bees at this time of the season. My winter loss was about 5 per cent—mostly due to starvation, as the bees

were under 6 to 8 feet of snow for about eight weeks, and while under the snow started brood-rearing, which exhausted their stores. I winter in four-colony cases. This spring I have so far found twenty cases of American foulbrood, but no European foulbrood. I expect it to show up, though. The wonder to me is that none is in evidence yet. It may be due to the fact that I did not allow a single colony to become badly diseased last season, as I examined every brood-nest every seven to ten days throughout the season.

But to return to the American foulbrood I have this season. To treat that by your method of eradication we would burn those colonies. There is not a colony in the lot in which a dozen diseased cells can be found, and the colonies will average seven combs of brood today, with the clover flow thirty days off. The most of those colonies are carrying supers today, or they would swarm out during the fruit bloom, which is now on. To burn those colonies would mean the burning or destroying of—if we have a good season—3,000 pounds of honey and the loss to me of a round \$500, and this at a time when we need every last ounce of food possible to obtain. I should resist the burning of those colonies by every means in my power.

I am not saying that it will not work with you, for under your conditions it probably will. But I do contend that under conditions as they exist in Ohio, your plan will not work, and I do believe you are making a mistake in advocating such a plan for universal use. One of the greatest faults I have to find with our bee journals is the publishing of plans of different sorts that for their success demand a condition that is not universal. It may be permissible to publish these plans, but qualifying statements should be made.

To refer again to my bees. I am certain that my outfit is in far better condition because of my having had the diseases, than it would have been had I not had the diseases. The disease made me do things that I knew ought to have been done that I probably would have neglected. In other words, it made me give my bees close attention and do the things that you and I and other apiary inspectors are advising beekeepers to do, that we do not do ourselves.

I do not believe there is any apiary inspector who can examine a large apiary known to be diseased and discover every case of disease present on one inspection. I have examined my yards three times this spring and each time I have found additional cases, and I expect to find more, and I have had no robbing.

For several years I have held that with us it was too much to hope that we can ever eradicate bee disease. But we can teach our beekeepers how to handle the disease, and that is what we are trying to do.

Weston, Ohio.

Women's Clubs and the War Foods

By Mary G. Phillips

IT used to be that mention of Women's Clubs made men, and many women, smile, and some supposedly intelligent women even prided themselves upon the fact that they did not belong to a club! But that day is past, thank goodness! and the way in which groups of women are begged to help, or to use their influence in all sorts of civic and national problems, is sufficient evidence that clubs justify their existence. Just as important as the aid they render a community, however, is the inspiration and stimulus they give to the individual member, and it is this which we miss if we drop out of our neighborhood clubs in order to give more time to war work. I believe that it is far better to keep your club, but turn it into an instrument for helping win the war.

Of course there are clubs, and clubs. In one small community of my acquaintance, composed of about thirty-five families, there were three flourishing clubs several years ago. One was a sewing club which met at noon, ate a sumptuous lunch, and spent the afternoon either mending or embroidering, according to the size of the family of the individual member, and talking, the discussion ranging not far from kitchen and children. The second club was frankly a card club, composed of women who felt the need of relaxation from the cares and responsibilities of housekeeping. These two clubs flourished side by side for many years, and it was not until three years ago that the growing need for something different crystallized into a new club. The women who formed this last one felt that they did want the stimulus that comes from rubbing up against other minds, and they did want their thoughts turned occasionally into channels other than those which had to do with their everyday tasks, but they wanted the new channels to lead somewhere. So the new club, scoffed at as "high-brow," affiliated immediately with the County Federation, in order to know what lines of helpful work were being carried on and to become a part of the large movement for better schools, better care for sick and needy children, etc.

Now, what has happened to these three clubs since the war changed our whole fabric of daily life? At first, the more thoughtful and earnest workers dropped their club membership to enable them to give the time to Red Cross work in the city. This made the clubs sit up, and it was not long before each made its decision as to its future character. The sewing club dropped its luncheon, each member bringing two sandwiches for herself, and the sewing became Red Cross work. This club is now an active Red Cross Unit, and every woman in the town works there instead of taking the long trip

to the city. I regret that the second club remains a card club, for these poor, overtaxed members, carrying so great a part of the burden of war, feel more than ever the need of relaxation. The third club, after much deliberation, decided to keep its identity and to help the war work in avenues other than the Red Cross. With the insistent needs of the Red Cross ever before us, it is hard to remember that we must not relax our efforts one iota in helping on the usual work which falls to women's lot in a community. So this club is continuing the encouragement of gardening and canning in the colored settlements nearby, is still carrying on the work of the visiting nurse in the county, and other such work. Naturally, the character of its meetings has changed materially since the war began, and that brings me to the point of my story—the connection between clubs and food. Every club should be a center of food conservation today. Is your club doing it? If not, cannot you see that every meeting includes a discussion of the latest news from the Food Administration?

For the June meeting, the Friday Club had a Hoover Day, when each member pledged herself and her family to wheatless meals until harvest. The wheat substitutes, rice and rice flour, cornmeal and corn flour, barley, oatmeal, potato flour and peanut meal formed the basis for the program. Each talk on a substitute was only five minutes long, but in that time much was learned concerning the production and use of each one. Food Administration posters and Hoover costumes added a touch of color to the room, and on the table were all sorts of delicious foods, breads, muffins, cakes and puddings, made entirely from substitutes. Each member had contributed her best recipe and a sample. As these were tasted and discussed, two things became clear—that better results are obtained generally if you mix two substitutes instead of using just one, and that you can use your old favorite recipes if you follow the Food Administration table of substitutions. This table is invaluable if hung on the kitchen wall where it may be consulted conveniently.

Measurements of Substitutes Equal to One Cup of White Wheat Flour

Barley— $1\frac{3}{8}$ cups.
Buckwheat— $\frac{7}{8}$ cup.
Corn flour—1 cup (scant.)
Corn meal (coarse)— $\frac{7}{8}$ cup.
Corn meal (fine)—1 cup (scant.)
Corn starch— $\frac{3}{4}$ cup.
Peanut flour—1 cup (scant.)
Potato flour— $\frac{3}{4}$ cup.
Rice flour— $\frac{7}{8}$ cup.
Rolled oats— $1\frac{1}{2}$ cups.
Rolled oats (ground in meat chopper)— $1\frac{1}{8}$ cups.
Soy bean flour— $\frac{7}{8}$ cup.
Sweet potato flour— $1\frac{1}{8}$ cups.

You see from this that you can use any recipe that you like, the only difference being that instead of using wheat flour you substitute the amount of some other grain or a mixture of two, according to this ta-

ble. The batter often looks too thin or too thick, but you will find that if you have measured accurately (all measurements being level), the result will be good after baking. All substitute mixtures should be baked **more slowly and longer.**

The best cakes made from substitutes at the meeting were the three for which I give recipes below. The sponge cake was especially light and tender, and as corn flour is not very expensive, it does not make an expensive cake, particularly if you have your own eggs:

Corn Flour Sponge Cake

4 eggs.
2 tablespoons lemon juice.
 $\frac{7}{8}$ teaspoon salt.
1 cup sugar
1 cup corn flour

Separate the whites and yolks of eggs; beat yolks until thick and lemon colored, then add the lemon juice and salt. Add sugar and beat until light. Fold in the well-beaten whites of eggs and the sifted flour and bake in a moderate oven.

Spice Cake—Using Barley Flour

$\frac{1}{2}$ cup fat.
 $\frac{3}{4}$ cup sugar.
1 cup syrup or honey.
3 eggs.
 $\frac{3}{4}$ cup milk.
1 teaspoon vanilla.
 $\frac{1}{2}$ teaspoon ginger.
6 teaspoons baking powder.
 $\frac{1}{4}$ teaspoon salt.
1 teaspoon cinnamon.
 $\frac{1}{2}$ teaspoon cloves.
1 teaspoon allspice.
 $3\frac{3}{8}$ cups barley flour.
1 cup raisins.

Cream the fat, sugar and egg yolk. Add the syrup and mix well. Mix or sift the dry ingredients and add alternately with the liquid. Add the flavoring and fold in the well-beaten egg whites. Bake for one hour in a moderate oven, increasing the heat slightly after the first twenty minutes.

Chocolate Cake, Using Buckwheat Flour and Ground Rolled Oats

$\frac{1}{2}$ cup fat.
 $\frac{3}{4}$ cup sugar.
1 cup honey or syrup.
3 eggs.
 $\frac{3}{4}$ cup milk.
1 teaspoon salt.
12-3 cups buckwheat flour.
 $\frac{1}{2}$ cup ground rolled oats.
6 teaspoons baking powder.
1 teaspoon cinnamon.
2 squares chocolate.
1 teaspoon vanilla.

Cream the fat, sugar and egg yolks. Add the honey and mix well. Add the dry and liquid ingredients alternately. Add flavoring and melted chocolate. Fold in well-beaten egg whites. Bake about one hour in a moderate oven, raising the temperature a little after the first twenty minutes.

Going without wheat seems like a little thing to do when we read of the ration our American prisoners are living on in the prison camps of Germany. Here is a sample:

Breakfast—Acorn coffee, two slices of bread made of rye, sawdust and potato flour.

Dinner—Soup with a small piece of tough beef, coarse turnips and no potatoes.

Supper—Soup again, with two slices of bread.

Red Clover as a Honey Plant

By Frank C. Pellett

THERE have been so many conflicting statements regarding the question as to whether or not the honeybee is able to secure honey from red clover (*Trifolium pratense*), that it has seemed worth while to investigate the subject with some care. There have been so many reports of honey from this source, that it is desirable to learn whether the honey did come from red clover, or whether the beekeepers have been mistaken, and some explanation of the confusion is necessary. There is no question but that the plant secretes nectar in abundance, but since the corolla tubes are much longer than the tongues of the bees, they are unable to reach it under ordinary conditions. It is a well-known fact that plants behave very differently under different climatic conditions, so an effort has been made to secure evidence from as many localities as possible, and from a great variety of conditions.

In Iowa the writer has sometimes found bees working freely on red clover in extremely dry seasons. At such times, the bees were apparently getting some nectar, although it could not be detected in the hive. However, one year Mr. C. H. True, of Edgewood, Iowa, had on exhibition at the State Fair a generous quantity of honey which he thought was secured from red clover. It was slightly tinted with red, and had a flavor different from white or alsike clover honey. The explanation often given is that in dry seasons the florets are somewhat dwarfed, and because of the shorter tube the bee is able to reach the honey. Dr. L. H. Pammel, botanist at the Iowa College of Agriculture, has made a special study of bees and red clover under Iowa conditions. After having many measurements made, he has reached the conclusion that the effect on the length of the corolla tube, as a result of drought, is so slight that the bee would not be able to reach the nectar from this cause. He goes on record as follows:

"I have for several years closely observed honeybees and red clover, and from these observations I am still inclined to the opinion, earlier expressed, that honeybees do not get nectar from the flowers of the red clover, notwithstanding the opinion of many beekeepers in Iowa." (Third report Iowa State Bee Inspector.)

At the 1917 convention of the Illinois Beekeepers, Mr. Frank Bishop, of Virden, reported that one season he secured an average of 100 pounds per colony from 150 colonies, from red clover. According to his statement, there was no other bloom within reach at that time. He further stated that he visited the red clover

fields, investigated the matter carefully, and was fully satisfied that red clover was the source of the honey.

So many reports from well-known beekeepers are to be found in our literature, that it seems worth while to quote several of them, together with the place where the reference is to be found. Mr. Wm. McEvoy, of Woodburn, Ontario, wrote to Gleanings in Bee Culture, page 486, 1907, as follows:

"In September, 1905, I extracted over 3,000 pounds of pure red clover honey, after giving the bees plenty to winter on. This honey was a light amber color, and good in flavor, and sold for the same price as honey gathered from white clover. My bees, being Italians, worked well on the second crop of red clover, which was not injured by the midge in my locality, in 1905, on account of the first crop being cut early."

Adrian Getaz, of Knoxville, Tenn., makes the following contribution to



Red Clover Blossoms.

the subject in Gleanings, page 660, 1909.

"In regard to bees gathering nectar from red clover, several opinions have been advanced. Generally it is supposed that owing to drier weather, the second crop has blossoms with shorter corollas, and that the bees can reach the nectar on that account. Another theory is that the nectar is more abundant, and fills up the corollas better, and thus comes within reach of the bees. A German apiarist a few years ago undertook to settle the matter, and spent a part of the summer lying down in the clover fields to see how it was. He reported that very few insects take the nectar through the corollas; but some kinds cut a hole near the bottom and help themselves through it. The hole once made, a number of insects, including bees, take advantage of it; and if the bees do not work on the first crop, it is because there are few hole-boring insects present."

Here follows a brief report with nothing to indicate whether the bees were seeking nectar or pollen:

"Last year was very dry and there was scarcely any white clover in

blossom here; but the bees went fairly wild on the red clover, and it was the first crop, too." (J. F. Brady, Deerfield, Minn. Gleanings, page 149, 1911.)

That the subject is not new will be found by examining the files of the bee magazines of many years ago. Apparently it has been a controverted subject since beekeeping has been followed seriously in America. In the first volume of the American Bee Journal, page 228, 1861, we find the following:

"I noticed, in August and the beginning of September, while the bees were gathering honey from buckwheat, that they obtained pollen of a brownish color from some source. On investigating the matter I found that they collected it from red clover. This somewhat surprised me, as I had never seen them gathering honey from the red clover to such an extent, particularly while other forage was plenty. * * * I have also noticed that the bees visited only those heads that were imperfect, the tubes being shorter in consequence."

The principal interest attached to the above is the statement that the bees visited only the imperfect blossoms. On page 9 of the same volume is a statement somewhat similar, reported in one of the German journals, of Italian bees getting honey from red clover, in 1858. It is said that the season was very dry and the blossoms somewhat smaller as a result.

In 1899, page 15, American Bee Journal, we find another report of bees working on it in dry weather:

"My bees work more or less on it almost every year during hot and dry weather; but it does not produce as fine honey as white clover; when candied it is coarser grained, and has a water-soaked appearance. I wish that my bees would let it alone, for we have plenty of white clover when the red is in bloom." (Fred Bechle, Poweshiek County, Iowa.)

Again, on page 27 of the same issue, Theo. Rehorst, of Fond du Lac County, Wisconsin, reports:

"The mammoth red clover produces good honey and all our honeybees can reach the nectar, although the corolla is far longer and deeper than the common red clover. I never saw any honey from common red clover; only thin, red stuff, thin as water."

In 1903, E. E. Hasty, of Ohio, wrote, in the American Bee Journal, that while he admitted that bees worked freely on red clover at times, he was extremely doubtful about their ability to get much honey from it. The same doubt has been expressed by numerous observers from time to time, the usual explanation being that the bees are gathering pollen, rather than nectar.

On page 491 of the 1903 volume of the American Bee Journal is reported an interesting case of honeydew from red clover. Since it is the only case of the kind found in all the literature consulted it is quoted quite fully:

"For about ten days my bees have been bringing in honey from the

second crop of red clover. Now this is nothing remarkable, for I have seen them doing so for more than twenty years past; but recently, passing through a field of red clover in bloom, I stopped to watch them, and, to my surprise, found them working, not on the blossoms, **but on the leaves.** This, I confess, I had never seen before. On closer examination I found the clover leaves covered with small plant lice, and the under leaves covered with honeydew, very similar to that frequently found on the leaves of the hickory, oak and other trees, though the honey is not so dark-colored as from leaves of trees."

On page 839 of the American Bee Journal for 1906 is found a rather convincing discussion of the subject of honey from red clover. It was at a convention of the National Association, and several men of wide reputation took part in the discussion, and testified to the fact that they had secured surplus from red clover. Hutchinson stated that he had secured 500 pounds from red clover at a time when there was nothing else in bloom, and that it was a light amber or dark, white color. Messrs. Townsend, Stone, Davenport and others agreed that they had secured red clover honey, Townsend reporting as much as 2,000 pounds stored in two weeks' time.

The subject is discussed at length in Bulletin No. 46 of the New Zealand Department of Agriculture, by Isaac Hopkins, whose experience in this connection is interesting. We quote him in part:

"In my early days of beekeeping it was a moot point whether Italian bees worked on red clover or not. At this time I had a unique opportunity of testing the matter thoroughly, an opportunity which would rarely occur; therefore, I feel myself on safe ground when dealing with Italian bees and red clover.

"For five years (1882-87), I was located on the late J. C. Firth's estate at Matamata, where I started large bee farms. My bees, which were chiefly Italians, were near to thousands of acres of red clover. * * * Now and again we saw a few here and there gathering pollen from the blossoms, and sometimes a good deal of pollen from red clover was brought in when, no doubt, it was scarce elsewhere.

"In order to make a thorough test, I shifted, on one occasion, a number of strong two-story colonies to the center of a 700-acre paddock of red clover. The first crop had been cut for hay, and the second crop flowers were just opening. There was no ordinary bee forage anywhere near. After the fourth day, I examined the hives and found from the odor that came from them on removing the covers that some nectar had been gathered from the surrounding clover. I also observed that some clover pollen had been stored.

"There were two seasons out of the five when my bees worked more freely on the red clover than in others. In those seasons it was noticeable that

myriads of small slate colored moths flitted about the clover, while they were rarely seen at other times. I was much interested, and in casting about for the reason, I became satisfied after very many tests that the red clover was secreting at times much more nectar than usual, and it may have been that it reached a higher level in the tubes on these occasions, and so came within reach of the tongues of the bees. Be that as it may, some red clover nectar was gathered from second crop flowers in these seasons."

While the different observers are by no means agreed as to the reason why the bees are able to get nectar from red clover on occasion, the testimony is very closely agreed upon the fact that it is only from the second crop, and in hot and dry seasons, that the bees are able to store honey from this source. So many widely-known men come forward with the positive statement that they have been able to secure surplus honey from red clover, that we can hardly question the fact that honey is sometimes stored from this plant. Whether the corollas are punctured by other insects, the tubes are shortened by drought or the nectar rises higher in the tube, remains to be proven.

How I Won My Bee Honors

By D. M. MacDonald

MY apicultural training began in my boyhood, over 50 years ago, in the dear home garden, with its multitude of perennial flowers, its abundant fruit bushes and its miniature orchard of apple, plum and other nectar-bearing trees. The small valley was an ideal honey-producing one. In the summer every meadow field was like a garden bed, the white clover covering it as with a mantle of white, and in autumn the sloping hills on either side, for leagues and leagues, were one mass of purple heather, smelling on the glorious days of August and September sweet as a honeycomb.

Over forty years ago, in my own apiary, working among the bees was an unmeasured delight, and when the bee fever caught on, the pursuit became a fascination, and the study of the indefatigable workers became a charm. That the hobby proved a paying one increased the zest and added to the interest. My day's work only occupied from 10 a. m. till 4 p. m., with Saturday an off day, and Sunday, of course, a day of rest. So there was ample time for prosecuting the pursuit.

Fortunately, too, I was early introduced to bee literature of the best, those ancient tomes which breathe the true spirit of the Bee Master. For pure, unmitigated enjoyment, commend me to an old, old beebook. Its perusal opens up a new and untainted pleasure. As a counterpoise I was made familiar with the masterpieces of the New World—with Langstroth's inimitable treatise, with Quinby's "Mysteries," with Root's admirable compendium, with Glean-

ings, and the Old Reliable. My own library was being steadily added to, and every beebook known was open to me.

About thirty years ago I made attempts to add to bee literature, and finding every article submitted accepted, I broadened out, sending contributions to America. There was in all this a fair foundation for presuming to aspire to adding the title of "Bee Expert" to my name. Urged by some members of the Council of the British Beekeepers' Association, who desired me to act as an examiner for the Third Class north of the Tweed, I resolved to make the plunge, in August, 1909.

Almost under the shades of Carlisle Ha, in the sweet valley of the River Eden, and looking out in the distance on the Cumbrian Mountains, clothed at the time in a rich dress of purple heather, I underwent a rigorous examination in all the branches of practical beekeeping. The examiner was thoroughly conscientious and occupied the full time specified. The dusk of evening being well advanced made the queens hard to find, and the day being rather unfavorable, handling bees and frames was a trying ordeal. However, in due course, there came down from headquarters the intelligence that I could write myself down a "Third Class Expert."

The Association has wisely decreed that no man shall proceed further unless he proves that he can handle bees and show that he has a good general knowledge of the whole art and practice of beekeeping on modern lines.

My ambitions, however, aspired higher, so, after a holiday in the South of England, visiting some of the leading apiaries there, I had a hard grind preparatory to sittings for the higher pass. This examination was all in writing, held near home, with a Major approved by the Council of the British Beekeepers' Association, to supervise the proceedings. The time allotted was five hours, the first half being taken up with the practical side of the subject and the other half with the scientific, five questions being given in each section, and every minute of it was taken up with busy writing. The test was a fairly severe one, as each question not only required several pages of foolscap to answer, but several of them had to be supplemented by drawings and sketches illustrating the subject treated, such as various organs of the bee.

At the close, the Superintendent sealed up the papers and posted them directly to the Secretary of the British Beekeepers' Association. The examiner receives only the numbers assigned to each candidate, no names being sent to him. In due course notice came down that a pass had been secured and later a "Second Class Certificate."

The first pass was merely a preliminary skirmish, in fact it is now described as the "Preliminary" examination. The second was to test the examinee's mettle. The crux of the

matter had yet to come. Towards the end of May in the following year the final examination was held. It somewhat resembled the former one, but candidates have to show evidence of a superior education. It covers a wider field, too, and embraces a knowledge of the bee literature of the Continent and America. The questions on the anatomy and physiology of the honeybee, in my case, were distinctively stiff and searching. No superficial knowledge would suffice to obtain a decent pass.

It may be well here to give a brief summary of the field covered in the three examinations. The lowest consists of two parts. The first is taken up with a series of manipulations of hives, piecing together sections, frames, inserting the foundation in these, handling bees, spotting queens and handling frames. Few candidates fail in this branch. The second which consists in oral questions, may be made a severe test, covering, as it does, the whole field of elementary knowledge of bees and beekeeping.

To pass the second, candidates must show evidence of a fair education, and the knowledge demanded includes the following: 1. The natural history of the honeybee, with its anatomy and physiology. 2. Products of bees. 3. All about swarming. 4. The apiary as a whole. 5. Handling frames and manipulating stocks. 6. Wintering bees. 7. Difficulties of beekeeping, including diseases. 8. The work of each month of the year. 9. Honey and wax extractors. 10. Smokers and other appliances for subduing bees. 11. Comb foundation, fitting in, etc. 12. Our bee flora. The most common nectar-bearing flowers and trees.

For the final pass evidence of a good education has to be certified, and at least three years' practical experience of beekeeping is requisite. Candidates will be subjected to somewhat severe tests in any or all of the subjects given above and they will be required to show a satisfactory acquaintance with the best literature on bees and beekeeping.

Even then the ordeal is not over for them. If they pass the paper test they must deliver a short lecture on some beekeeping topic before the Board of Examiners in London. The subject is given out to the candidate only five minutes before he is called on, and that time is given him for thinking over the topic selected. At the option of the Board, he may be subjected to a further oral examination as well as to practical tests of his abilities. In my own case I had to deal with "The Pitfalls That Beset the Footsteps of a Novice, and the Advice You Would Give in Order to Save Disaster." The title is somewhat paraphrased, as the Council may consider they have an "all rights reserved" claim on the original for future use. In course of time the "Final Certificate" reached me and I became a full-fledged "Expert."

These certificates are highly valued, and many of their possessors, by their holding the Final, have been

able to secure good situations as lecturers, experts and instructors in beekeeping to many of our County Councils and to some of our agricultural colleges. Amongst these certified experts are several ladies. They make excellent candidates at all the three stages, and in the final of those who secure 90 per cent and upward, generally half are of the fair sex.

My position as examiner of the paper work of the intermediate and final, enables me to conclude that excellent results follow the close study of the whole field of beekeeping ne-

cessitated by the preparation for a pass in these stages. It is almost impossible but that these young men and women must turn out better apiarists as a consequence of the efforts made.

The recently re-constituted Scottish Beekeepers' Association, through their Council, are making an earnest endeavor to organize somewhat similar examinations, with power to grant certificates—but on a rather wider basis. The Irish Beekeepers have been issuing expert certificates for a good many years.

Banffs, Scotland.



Bees in the City

Would the action of the council mentioned in the following clipping be legal, and would it stand?

Pennsylvania.

"By unanimous vote the Council passed on first and second reading an ordinance forbidding the keeping of bees anywhere in Franklin within 500 feet of a dwelling house. It was conceded that there are very few places left where bees may lawfully be kept in Franklin when this ordinance passes. A fine of \$25 is imposed, with jail for 30 days if fine and costs are not paid. Mayor Emery stated that only two or three citizens will be deprived of their bees by the ordinance. He said the keeping of bees is a menace to the neighborhood, and instanced a case where he said children dare not play in their yard because of the bees kept by a neighbor. 'A bee is a useful ar-

ticle,' said the Mayor, 'but the city is not the proper place for it.'"

Answer—This is only another example of arbitrary action on the part of a town council. It would be no more unreasonable for them to pass an ordinance prohibiting the keeping of dogs within the city limits because somebody had been bitten, or horses because someone had been kicked. There is little chance that such an ordinance would stand the test in court. However, the beekeeper with only a few colonies kept for pleasure would find it too expensive to fight such a case. This is one more good example of the imperative need of an organization to look after such matters for beekeepers everywhere. With 5,000 members, a membership fee of a dollar each would pay for fighting such farcical ordinances, as well as providing other needed legal service for the beekeepers.

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

Honey and Good Health

I notice very frequent objections to use of cane sugar. What can you say of the use of honey as a substitute?

A. Cane sugar requires digestion. When taken in concentrated form and in considerable quantity, it is irritating to the stomach in highly objectionable and various ways. Honey has the advantage that it requires no digestion, but is ready for immediate absorption. Honey contains various flavoring matters derived from flowers, some of which are harmful to some people. In fact, most people are able to take honey only in moderate quantities. A large amount produces discomforts, often headache. Some people are made ill by eating honey. Such persons are usually individuals who have been sensitized to the pollen of the plant from which the honey is gathered. The bee in the process of gathering honey collects considerable quantities of pollen and other foreign bodies. It is said that bees introduce into the honey minute quantities of a substance from a poison bag for the purpose of preserving the honey, which is accomplished by the formic acid which it contains. This is highly irritating, and in certain hypersensitive persons seems to produce unpleasant effects.

The foregoing is taken from that excellent monthly, Good Health. One is somewhat at a loss to know what will be the effect of its teaching upon the consumption of honey. The government is making urgent appeals to beekeepers to produce the largest amount of honey possible, advising the production of extracted honey rather than comb honey, because a colony of bees will produce a larger amount of honey in the extracted form; we are to Hooverize on sugar so that our allies may not suffer for want of it, and it is not strange that a seeker after good health should turn to that most popular and reliable dispenser of information regarding matters of diet, and inquire what is to be said of the use of honey as a substitute for sugar.

In the reply certain things are said



The beekeeper of the South is modernizing his methods fast.

about the effects of honey and of sugar and each one is left to judge for himself whether it is advisable or not to eat less sugar and more honey. And it is not very hard to suppose that some might think somewhat after the following fashion: "Honey has flavoring matter, harmful to some people; most people are able to take honey only in moderate quantities; some people are made ill by eating honey; a large amount produces discomforts, often headache; and there's some sort of trouble about a poison bag. Doesn't look like a very safe thing to eat honey. Sugar seems to be a bad thing, too, but only when taken in concentrated form and in considerable quantity. So the only danger with sugar seems to be in having it in concentrated form. Well, I don't need to take it in concentrated form; it's easy to dilute it so as to make it perfectly safe; but there are several things wrong with honey that I don't know how to remedy; so it's sugar for me." Now, it is not at all likely that Good Health thinks the average person is in any more danger from eating honey than from eating sugar. What a pity it didn't say so. In fact it has said in previous issues in effect that honey is the safer of the two, and why not now? To be sure, there's that one sentence, "Honey has the advantage that it requires no digestion but is ready for immediate absorption," but that sentence contains so few words in its favor as compared with the many against it, and the number of words is likely to have undue weight with the not too careful reader. As a matter of fact, however, that matter of "immediate absorption" is a thing of so much importance that it overbalances by far any real objections that may be made against honey.

It would be interesting to be told what flavoring matters in honey are harmful to some people, and just how many people in a thousand have been thus harmed.

Most people are able to take honey only in small quantities, a large amount producing discomforts, often headache, we are told by Good Health. Will it tell us whether honey is any worse in this respect than sugar?

There is an intimation that there is something unwholesome in the pollen gathered by bees. It is true that many pounds of pollen are gathered, but nearly all of it is stored separately, and does Good Health really know of any harm coming

from the minute quantity of pollen that is found floating in honey?

"It is said that bees introduce into the honey minute quantities of a substance from a poison bag." That seems to be a resurrection of a silly notion that had some currency a good many years ago, but was supposed to have found its final resting-place years ago; the whole of it being that the bee uses its sting as a trowel to manipulate its wax, and just before sealing up a cell of honey it drops a tiny drop of poison from its sting. Has Good Health any proof that anything, good or bad, ever passes from the poison bag or sting into the honey? And does it know that any real harm has come from the minute quantity of formic acid that honey contains?

It is not believed that so reliable a journal has any desire to give honey anything but a fair show, and it may not be unreasonable to ask it to tell beside the advantage of immediate absorption, whether honey contains vitamins and minerals not at all contained in sugar, and if so, what is the importance of them.



Transferring an apiary in the South—F. M. Baldwin.

MISCELLANEOUS NEWS ITEMS

Keep Bees Better—Keep More Bees—A bulletin on bee culture has recently been put out by the Department of Agriculture at Washington, D. C., headed as above. It is an urgent appeal to beekeepers not only to run their own bees for the most honey, but to rent or lease unproductive bees and get the maximum amount from them.

The bulletin says:

"There are in the United States about 800,000 persons who own bees, but there are not enough who keep bees efficiently and with the greatest possible profit to themselves. The war has created a need for abundant production of all food supplies

and honey is a non-perishable, concentrated food. Efficiency in honey production comes only from study of the best practices perfected and recorded by others. The study of the bees themselves must not be neglected, for all beekeeping practice depends on a knowledge of bee activities. California beekeepers will do well to study the literature on eastern methods. Local differences are often unduly magnified.

"This circular is compiled to make easily available certain material which cannot well be presented in bulletin form. If your beekeeping questions are not answered here or in the Bureau bulletins, please indi-

cate your needs. Every beekeeper should join the nearest beekeepers' association, should subscribe for a least one bee-journal, should own and study at least one book on beekeeping and should know what aid in beekeeping is obtainable from State offices or from the Agricultural College."

A California Bulletin—"Beekeeping for the Fruit Grower and Small Rancher, or Amateur," is the title of a 12-page bulletin written by Geo. A. Coleman and gotten out under the direction of the College of Agriculture at Berkeley, Calif. It is, as its name indicates, a bulletin of information to the small beginner. Subjects dealt with are Kind of Bees to Keep, Where to Obtain Them, Equipment Necessary; How to Handle Bees, What You will Find in the Hive and What to Do, Cleaning Hives and Frames, Preparing for the Honey-flow, Beekeepers' Library, etc.

Missouri Apiary Superintendent.—Our good friend, R. A. Holekamp, of R. F. D. 1, Hillsboro, Mo., has been appointed superintendent of the Apiary Department at the Missouri State Fair, which is to be held at Sedalia, August 10 to 17. Friend Holekamp believes in getting things properly advertised, and he is sending a circular letter to beekeepers soliciting their co-operation for the apiary exhibit. Write to him for information.

Isle of Wight Disease.—We are in receipt of Bulletin No. 85 of the West of Scotland Agricultural College, by Joseph Tinsley, B. B. K. A. Mr. Tinsley makes a preliminary report on his experiments concerning this disease. He evidences the fact that the remedies recommended during the past years, izal, bacterol, dioxygen, phenol, formalin, sulphur and other drugs, have given negative results. But he makes a rather encouraging suggestion concerning a culture recommended by the famous Professor Metchnikoff, *Bacillus Bulgaricus*, which would appear to have cured at least one case on which experiments were made.

With so many learned experimenters at work on Isle of Wight disease, we may hope to have, some day, a cure which will also cure the similar disease, the so-called paralysis.

The Ames Meeting.—The second annual Short Course in Beekeeping at the Iowa Experimental Station at Ames, Iowa, was a decided success, as it was well attended by beekeepers and students.

Some of the notable addresses were by C. P. Dadant, of the American Bee Journal, Hamilton, Ill.; Mr. D. A. Davis, of Washington, D. C.; Professor F. Eric Millen, Mr. W. S. Pangburn, of Center Junction, Iowa; Professor Pammel, and others of the faculty, and Mr. Edward Brown, of Sioux City. Mr. Fred Hall's address regarding swarm prevention was a striking one, and attracted much attention. Dr. Bonney, of Buck Grove,

showed models of some of his new ideas, a feeder, hive entrance, combined decoy hive and swarm catcher, electric comb patcher and others.

While at Ames the writer was shown the last word in aluminum honeycombs, the invention of an Iowa man, and there seems to remain not a particle of doubt but that it is a decided success. The samples I saw were pieces inserted in regular combs, and the bees had not only accepted and used them, but where they were shallow had built them up as though working on wax combs. As such combs would be moth-proof, as well as mouse-proof, they could be stored anywhere without fear of loss. When aluminum is again available at a moderate price they can be made to sell at about 25 cents, I am informed by the inventor.

A. F. BONNEY.

Bibliography—The Flower and the Bee

"The Flower and the Bee—Plant Life and Pollination" is the title of a magnificent work, by our well-known correspondent John H. Lovell, whose articles on honey plants and on pollen-gathering insects have been much appreciated, not only in the American Bee Journal, but in other special publications.

The book presents the function of bees, beetles, flies and other insects in the pollination of flowers. It contains 119 illustrations of flowers and insects in the skilled manner for which the author is well known. It is a monumental work and deserves a place on the book-shelf of every student of entomology or botany.

The New York State Beekeepers' Association will hold a Field meet at Hayt Corners, N. Y., August 2, at the summer home of C. B. Howard. Dr. E. F. Phillips will probably attend.

Loss of Bees by Flood.—Mr. J. W. Tinsley, of Ames, Iowa, lost an en-

tire apiary by a cloudburst. Nine and a half inches of water fell at that spot that evening.

Palmetto Honey.—Good honey can be produced right by the side of Lake Okeechobee, in southern Florida. We have just received a fine sample of scrub palmetto honey from C. C. Cook, Tasmania. This town is to be found only on the latest maps. It is a new place, west of that big lake, in the wildest of Florida.

Idaho Meeting.—The Annual Field Meeting of the Idaho-Oregon Honey Producers' Association will be held on the premises of Gottfried Lohrli, Parma Idaho, Wednesday, July 10. All honey producers of southwestern Idaho are cordially invited to attend. P. S. FARRELL, Sec'y.

UNITED STATES DEPARTMENT OF AGRICULTURE

Bureau of Markets

Honey arrivals since May 15:

Medina, Ohio—220 pounds Kentucky, 4,005 pounds Nebraska, 7,638 pounds Florida, 757 pounds Pennsylvania, 1,080 pounds Colorado.

Shipping point information Friday, May 31:

San Francisco, Calif.—Demand light, fair for export, movement slow, growers holding for higher prices. Prices to growers: Orange blossom, 18-22c, mostly 20c; sage, 20-22c; light amber, 16-2-3 to 20c. Unofficial estimate orange blossom crop, 1918, 300 to 400 tons; expect lighter crop of sage than last year, on account of cold weather and rains.

Los Angeles, Calif.—Demand and movement good, market strong. Cash to producer on farm: White orange, strained, per pound, 20-21c, mostly 20c.

Kansas City—Receipts very light. Supplies insufficient to meet demand. Demand limited, market strong, few sales, all sales in small lots. Missouri, first native honey on market, quality and condition good; 24-section flat cases, No. 1 light, \$7.50. Beeswax: approximately 500 pounds ar-



Group present at the Short Course at Ames, Iowa.

rived. Buyers paying 40c per pound.

Minneapolis—Receipts very light. Supplies very light. Demand and movement good, market firm. All sales in small lots. Comb honey: Minnesota, Wisconsin and Iowa, white, 24-section cases, \$6.50; special brands, \$7.00-7.20. Extracted: Minnesota white, fancy, 60-lb. pails, 21-22c per pound. Beeswax: no sales reported.

St. Paul—Receipts light. Supplies light. Demand good, market firm, all sales in small lots. Comb honey: Minnesota and Iowa white, fancy, 24-section cases, \$6.50. Extracted: Minnesota, supplies exhausted. Beeswax: no sales reported.

Denver—No fresh arrivals. No comb honey on market; extracted honey supplies practically exhausted. Demand good, movement slow, market very strong. Sales direct to retailers: white to amber, 19-20c per pound. Beeswax: receipts very light. Supplies very light. Demand good, movement slow. Price to producers, 37½-40c per pound.

Chicago—Supplies negligible. No sales reported.

Philadelphia—6 kegs and 1 barrel Florida arrived. Supplies extremely light. Demand far exceeds supply, market strong. Extracted: domestic and southern in barrels, 24c per

pound. Comb honey, no supplies, no sales.

Cincinnati—3 Cuba, 150 lbs. Tennessee, 4,293 lbs. Alabama, 945 lbs. Kentucky, 2,724 lbs. Florida arrived; imports via New York City, 695 lbs. extracted. Comb honey, no arrivals reported. Extracted: supplies very light, demand good, market firm, few sales, account of high prices; Cuban, last sales about 10 days ago; dark amber, 22c per pound. No later sales reported.

St. Louis—Practically no supplies; no sales.

New York—Arrivals, 265 barrels Porto Rico, 8 cases Mexico, incomplete. Receipts light. Movement slow, demand moderate. Since April 15 no reports arrived from Cuba, Santo Domingo or Haiti, only arrivals now from Porto Rico, Texas, Florida and Mexico. Extracted honey: Porto Rican, also some Cuban that arrived previous to above mentioned ruling, \$2.07-2.52 per gallon; Florida, few sales; light amber, \$2.60-2.65; white, \$2.80-2.90 per gallon. Beeswax: arrivals, 160 bags West Indies, 10 cases India, 30 bags Haiti, 164 bags Cuba, 80 bags Porto Rico, 46 bags and 15 cases South America, 38 packages Portugal. Market steady, demand and movement good. Yellow, 41-43c; dark, 38-41c per pound.

expecting to feed candy soon. What was unusual with me was the frequent occurrence of pretty well soaked chaff above the brood-chamber. There was one colony that exteriorly showed no sign of life, so I let it go almost to the last. Upon removal of chaff tray I saw the bees quite lively, stores almost gone. By giving them frames of honey I saved them. When the bottom-board became revealed there came in sight a thick layer of dead bees, enough to block up the entrances (7-16 inch), so, of course, they could not get out. There was some wetness about the frames. What was the cause of all this? Next to this colony was another in exactly the same kind of hive, and all was O. K.

4. What is your way of fixing up preparatory to outside wintering? Please state exactly what to place over brood-chamber, style of board over same, etc.

PENNSYLVANIA.

ANSWERS.—1. I'm not sure there's anything to criticize, unless it be that with so shallow an entrance close down on the floor there might be danger of clogging with dead bees.

2. I don't know what is best. Good results should be obtained with a strong colony having an entrance 2½x¾, or an entrance at each end made by turning your entrance-block upside down.

3. I don't know why this should have been so. It's an old saying that bees never do anything invariably, and it often happens that under what appear to be exactly the same conditions there are quite different results, which no one can account for. With fuller knowledge of all particulars I might be able to tell why, but most likely not.

4. I have had no experience for many years in outdoor wintering, and so can only refer to the experience of others as found in the books and bee journals.

Drumming

Here is a little experience I had drumming bees to prevent swarming.

The swarm came off and clustered in the usual way. I shook them in a swarming box and left it in the grass until about 5 o'clock p. m., then put them back in the same hive they came out of. The next day about 10 a. m., I took one super off and put three empty supers on next to the brood-chamber, put the partly filled one on top and stopped the entrance of the hive, drumming the bees up in the supers to give them to understand they had lots of room. I let them out, and in less than two hours they were working and made no further attempt to swarm. They made 92 full combs and seven partly filled combs of honey.

Was it the drumming that did the good?

NEW YORK.

ANSWER.—It is hard to say positively, but it seems certain your treatment was instrumental in preventing further swarming. But one cannot be sure just how or why. It is possible that the bees had been delayed in swarming, perhaps by bad weather, and at the time the swarm issued one or more virgins were ready to emerge, which they did as soon as the old queen went out with the swarm, and then while the old queen was out all that had not emerged were massacred in their cradles, so that no cells were left for further swarming. There are other possibilities in the case, but I doubt that you would find it a reliable line of treatment in general. At least I would expect more failures than successes.

Sting

Having never read or heard of anyone being stung by a queen bee, I would like to know the effects of same; is it worse than the sting of a common bee?

ILLINOIS.

ANSWER.—I don't know what the effect of a queen's sting would be, but would not expect it to be different from that of a worker. I've been handling queens for more than half a century, and I've never been stung by one, and should not expect one to sting me if I should handle them a century longer.

DR. MILLER'S



ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

Swarm Prevention

I was reading the experience of one Fred W. Hall, of Iowa, on non-swarming. He says on or about the first of June he de-queens all of his colonies except where he wants an increase, then he takes the queen from the most populous colony and places her in a new hive, together with two or three frames of honey, and sets the new hive on the old stand, then in nine days he goes over all colonies and destroys all queen-cells except one good one. Then by the time they get straightened around it is too late to swarm. What do you think of the idea, and what effect, if any, would it have on the honey crop? INDIANA.

ANSWER.—Mr. Hall is a good beekeeper, and with him the plan results in good crops. In the hands of a careless man, there is danger that more than one queen-cell would be left, making swarming practically certain.

Comb Honey

1. When running for comb honey, what is the best plan to use to have on, full sheets of foundation or old combs?

2. Is honey ripe as soon as sealed?

3. How many supers do you use on each hive for comb honey? If you take it off as soon as the most of it is sealed, as you say in your book of "A Thousand Answers to Beekeeping Questions" two supers would be enough. The most beekeepers say tier up as long as the honey is coming in, and that is the way I have always done, but my honey is not as nice and white as I would like to have it. I have had as many as seven comb-honey supers on at one time.

4. I use the 8-frame hive. Which do you think is the best for comb honey, 8 or 10-frame? INDIANA.

ANSWERS.—1. Old combs, if you have them; if you haven't, then full sheets, but never starters unless you want to raise drones.

2. Yes, with occasional exceptions.

3. In a big flow two would be very unsatisfactory. Five would generally be all right, and occasionally a colony would need 7 or 8.

4. As a rule the larger hive is probably better.

Pound Packages—Hives—Extracted Honey

1. Will the bees from the south that are sold in pound and larger packages go through the winter all right here?

2. What hive would you advise me to buy, the Dadant hive or the Lewis hive?

3. What is the Dadant method for producing extracted honey? ILLINOIS.

ANSWERS.—1. Yes.

2. I don't know enough to answer.

3. Oh, my! It would take a book to answer that. Fortunately, there is such a book as Dadant's Langstroth. Yet in the main I suppose the methods of the Dadants are not very different from those of other good beekeepers.

Wintering

1. Will you be so kind as to criticize from your standpoint bee-entrance for winter as afforded by blocks which fill up a space 1½ by ¾ in.? The openings at each end are 2¾ by 7-16 in., making a total opening of 3 square inches.

2. What is or would be, your ideal of an opening to have during winter, when the total space available is 1½ by ¾ inches?

3. About March 20 there was unusually mild weather, after a winter during which I think the bees did not fly out at all. I took advantage of it to examine every one of my 62 colonies. Conditions then were about exactly the same as appeared May 7 last year, as to stores. I equalized stores, fixed up things generally,

May Swarm Returning to Hive

1. One of my swarms swarmed on the first day of May. I hived them on the old stand in a new hive with full drawn combs. They seemed all right and they made some honey. But finally they came out and went back into the old hive. What was the cause? Did they supersede their queen? I saw a few eggs in the new hive, some cells had two eggs. They swarmed last year, so the queen could not be very old.

2. Last winter one of my swarms died. In the spring, when I opened up the hive, I found about 50 pounds of honey. What was the cause. The honey was good. IOWA.

ANSWERS.—1. I don't know. You are above latitude 41 degrees and it would hardly seem that a normal swarm should come out the first day of May. The plurality of eggs in a cell after the swarm was hived looks as if the bees had no proper queen, but laying workers. These two points taken together look as if it might have been some sort of a freak swarm, which found itself no better off in the new hive and then returned. But this guess may be wrong.

2. It is possible that the colony petered out because it had a poor queen, or none.

Sealed Honey for a Swarm

Should a new swarm be put in a hive that has sealed honey in it—about 10 pounds? IOWA.

ANSWER.—There will be no harm in using such a hive for a swarm, provided there has been nothing like foulbrood in it, and in some cases the honey may be a help.

Making Frames to Exclude Queen

Up to the present time I haven't used a queen-excluder, as I run for bulk comb honey. But my bees increase so fast and get so crowded that the queen is forced up into the supers and nearly all the brood is drone. Couldn't the top bars of the brood-frames be made or spaced so as to exclude the queen, which would do away with the patented excluders, thus saving the beekeeper at least 30 cents on each hive? GEORGIA.

ANSWER.—The apertures in a queen-excluder must be very exact. If just a little too small neither queen nor worker can pass, and it takes an exceedingly small increase in size to allow a queen to pass. It would need very fine workmanship to have the spaces between top-bars thus exact. Even supposing you had them made thus perfect, the bees would crowd in bee-glue, and in only a short time you would find some of the spaces large enough to allow the passage of a queen. I don't believe the thing is worth trying.

Bees Deserting Hive

I had a swarm desert the hive this spring, leaving several patches of brood in combs, but no honey. I had noticed it was weak and looked for the queen a few days before they absconded, but could find none. They seemed all right, but weak. Why did they leave? MISSOURI.

ANSWER.—It was likely what is called a hunger-swarm; that is, the bees deserted the hive because they ran out of stores.

Care of Hives—Clover—Kind of Hives

1. I have six 10-frame hives and four 8-frame hives, all painted. I want to know how to take care of my hives. Had I better set each one on a brick? Had I better arrange 2x4x16 scantling to set the hives on, and how far apart should they be? How high?

2. Is wild clover or white clover a good pasture for bees?

3. When and how should I sow it?

4. Would one and a half acres be much help to my little apiary?

5. What advantage has the hive on page 153, American Bee Journal, over hives like the ones on page 121?

6. Which side of bottom-board would you use, shallow side or deep side TEXAS.

ANSWERS.—1. Putting hives on scantling 16

feet long would have the rather important advantage that it would be easy to level them. (They would be level from side to side, and the back end should be about an inch higher than the front end.) It has the disadvantage that jarring one hive would jar the whole lot. It has the further disadvantage that where the bottom-board rests on the scantling the water collects at each shower, tending to rot the bottom. On the whole, perhaps it is better to have the hive on bricks. Let the hives stand in pairs, the two hives of each pair as close as they can be without touching. The distance between each pair and the adjoining pair may be as little as 30 inches if you are badly crowded for room; but 4 feet is better if there is room. No need to have the hives very high; unless there be some special reason for it, four inches between the ground and the bottom-board will do.

2. Where white clover succeeds it makes splendid bee-pasture. But have an impression that it does not succeed well in all parts of Texas.

3. Sow it spring or fall, perhaps preferably with grain.

4. Yes, an acre and a half well set with white clover should yield quite a bit of nectar.

5. The hives on page 153 are supposed to allow freer examination of combs without danger of killing bees.

6. The deep side, allowing large entrance.

Kind of Hive

1. Would you advise a young man working in an office who wishes to keep from 10 to 20 colonies of bees to use Jumbo hives, or Standard 10-frame hives? I cannot be on hand to take care of swarming and want to obviate or check swarming as much as possible. I intend to run for extracted honey.

2. I have read in your "Forty Years Among the Bees," page 190, your experience with Jumbo hives. Do you conclude that the Jumbo hive is of little value in curbing swarming?

3. How do the Dadant and Jumbo brood-chambers compare in capacity? Mr. Dadant claims that his hive is practically non-swarming. MINNESOTA.

ANSWERS.—I hardly know what to say. One objection to the Jumbo hive is that being unusual, in case you should want to sell out you might not find so ready a sale as for something more nearly standard. With either hive you may be practically safe from swarming by using the Demaree plan. When you find the bees have started cells, put all but one frame of brood in an upper story over an excluder, leaving the queen in the lower story with one frame of brood (preferably one not very well filled with brood) and the hive filled out with drawn combs or frames filled with foundation. Some think it better to have empty extracting combs in the second story and the story of brood over this. Kill all sealed cells at time of putting up the brood, and again in 7 or 8 days later.

2. While it is a fact that the colony in the Jumbo hive was the first in the apiary to swarm, it is hardly likely that such would be the rule.

3. I don't think there is much difference in the capacity of the two. The freedom from swarming with the Dadant hive may be not only because of the large size of the hive, but also because the frames are spaced 1½ inches from center to center, instead of the usual 1¾.

Space Over the Bees in the Hive

How much space is allowable over the bees in the hive? I think of making boxes an inch deep and the size of a hive, into which I will put hard candy and invert said boxes over the bees, for additional feed. Would the inch over the space already there do harm or good? Will bees cluster above the frames if there is room for feed? IOWA.

ANSWER.—It is generally understood that at

a time when bees are busily at work building and storing, if more than a certain space, called bee-space, be allowed, the bees will build in it comb, and perhaps store honey therein; and if less than a bee-space be allowed, it will be filled with bee-glue. Exactly what bee-space is is none too well known, but it is somewhere in the neighborhood of one-fourth of an inch. So, in the busy season it is advisable to have neither more nor less than a bee-space above the frames or at their sides, although as large as three-fourths of an inch may be allowed under the bottom-bars.

But your proposal is to have an inch space over the top-bars to hold candy for food, and as you would hardly be feeding at a time of storing, the larger space could hardly do any harm other than to oblige the bees to keep warm the additional space, and this disadvantage may easily be overcome by the advantage of giving food when needed. The bees will readily go above to get the candy.

While it is a good plan to provide thus for the needs of the bees, there is a still better plan. It is to give the needy bees frames of sealed honey. You say you have no such frames. Well, then, feed the candy, but make your preparations so you will not need to do so again. Make it part of your plans this year to have two frames of sealed honey saved over winter for each colony you expect to have next spring. Good honey is better than sugar to feed babies, whether they be bee babies or household babies. If you don't need to feed the bees next spring to prevent starvation, you will need to fill up the vacancy in the brood-chamber, and thus allow the bees to begin just so much sooner to store in the supers.

Wintering

I am thinking of wintering my bees in two 10-frame hives, as a permanent brood-chamber with all the stores they contain. What, in your opinion, do you consider the worst drawbacks to this way of management, and would there be any need of manipulating the supers or combs before swarming time? MISSOURI.

ANSWER.—I'm not sure that I can tell exactly why, but there seems to be a limit to the amount of room that can be profitably used in the brood-chamber, and before deciding that you will run all the colonies in the way mentioned it would be well for you to try a minority of them in that way. It would hardly seem that any manipulation of supers would be needed before swarming time; yet you can't 'most always tell.

Moving Bees—Distance From Apiary

1. The weather being unfavorable last spring, and not knowing just when to move my bees, I waited a little too long. They had come through the winter strong, had plenty of stores, and I finally moved them from winter quarters on the southeast of the house, to the orchards. I did this at evening (nightfall). All seemed well, but next morning a large swarm of bees hovered over the old spot and they became chilled and settled on the base of the weatherboards of the house. I then picked them up and got a berry box full, and shook them before the hive and they all entered, but when they had warmed up, it seemed, they returned to the old spot and hovered over it until a rain set in and killed them. Was this a swarm which had lost its queen, do you think?

2. I moved the hive after dark and all seemed O. K. If so, what could I have done to save the bees? Would they have returned to the hive if I had replaced it in the old position?

3. Notwithstanding that bad luck, the hive thrived and I got a super of extracting honey at the end of the season. The honey was very dark. We have much sweet clover, some white clover, wild flowers of all kinds, and thickets of buckbrush. Several persons, on eating the honey claimed it made them dizzy.

Could it be some plant which causes this, or does all honey bring this on when eaten in quantities, or is this just a coincidence?

4 I have black bees and find them none too gentle, and want to requeen. Would an apiary of about 30 hives, distant about one and a half miles, mix and make hybrids if something should happen and the bees raised a virgin?

MISSOURI.

ANSWERS.—1. I don't think there was any swarm in the case. It was merely the bees returning from their flight to the place they had marked as their proper locality.

2. Yes, if you had returned the hive to its old position the bees would have joined it all right; only there would be some trouble with any of the younger bees that had never flown before the change, and had marked the new location, for they would want to stick to the new location upon returning from the fields. If you had fastened the bees in the hive for a day or so, putting them on the new stand, and then in the middle of the day opening the entrance after pounding on the hive so as to frighten the bees, very likely you would have had no trouble. In such a case, however, if some of the bees should persist in going to the old location, put there a brood-comb for the bees to settle upon, and at night shake these bees in front of the hive on the new location, repeating this each day, you would find that in a few days they would give up their old location.

3. It is possible there was something in the character of the honey to cause dizziness, but it is hardly likely.

4. There would be a considerable chance that one of your virgins might meet a drone from an apiary a mile and a half away.

Melted Combs—Using Old Combs

1. Last season I removed about 60 pounds of honey from a swarm that I had just purchased, and on melting up the combs was surprised that the wax did not set regularly, but was in a crumbled form, resembling cornmeal. The honey had a peculiar flavor and seemed a little sour or fermented. From two other hives in the same lot I noticed a peculiar odor, but could not find any indications of foulbrood similar to symptoms of disease as shown in government reports.

2. Is there any harm in using combs from old hives from which bees died this winter, where a few of the combs on places are moldy and filled with dead bees?

NEW YORK.

ANSWERS.—1. I don't remember that I ever had any experience with wax in this granular form, although I know it sometimes happens,

and I doubt whether the honey or disease had anything to do in the case. If you please I'll step down off the rostrum and give the boss a chance to talk; he knows a whole lot more than I do about wax.

(Usually the granular form of wax is due to the melting wax being beaten by the steam or boiling water. In many cases granules at the bottom of cakes are caused by this trouble. We have seen wax so beaten that it looked like cornmeal and contained 50 per cent of water. Dry heat is the remedy.—Editor.)

2. It will be all right to use them if there has been no disease in them

Requeening

Please give me advice through the American Bee Journal on the following: I have eight

hives of mixed bees that are very cross, so I want to re-queen. I want to take a hive with full frames of foundation, put in an Italian queen and set one of the hives of the hybrid bees on top of this hive, putting a queen-excluder between the two hives. After the Italian queen gets to laying and young are coming out, lift up the top hive and put a board with bee-escape, so bees can come down from old hive but cannot go back to the hybrid queen. After all bees are out, then remove old hive and kill hybrid queen. What do you think are my chances of success? I have already arranged one hive.

VIRGINIA.

ANSWER.—I think the chances are ten to one that your new queen will be killed.

Foulbrood

1. I would like to know the different conditions existing between American and European foulbrood. I have eight or ten colonies that have some kind of a disease.

2. Is the McEvoy treatment safe for any kind of diseased brood?

3. Is it necessary to use queen-excluders under extracting supers. The supers are two half stories fastened together with full depth frames in them. The hives are eight-frame size.

KANSAS.

ANSWERS.—1. In American foulbrood if you thrust a toothpick into a diseased cell and draw it out the dead matter will string out in a thread an inch or more long. In European foulbrood the diseased larvæ nearly large enough to seal over will have a distinctly yellowish color. The thing for you to do is to send a sample of the diseased brood to Dr. E. F. Phillips, U. S. Dept. of Agriculture, Washington, D. C., and he will tell you what the trouble is, and also send you information as to treatment. If you write in advance he will send you a box in which you can send the sample to him, and also a frank to pay postage.

2. It is generally used only for American foulbrood.

3. Excluders are nearly always used, as otherwise you are likely to have brood in your extracting-combs.



Bees of a drafted man. Walter Hagler, of Gibson, Miss., has just been called and had to dispose of this well-kept apiary



Home yard of R. A. Shults, at Cosby Tenn.

Classified Department

Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEEES AND QUEENS

ITALIAN QUEENS—Northern-bred, three-banded, highest grade, select untested, guaranteed, queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness and perfect markings. Price, one, \$1; twelve, \$10; fifty, \$35. Send for circular. J. H. Haughey, Berrien Springs, Mich.

FOR SALE—Golden Italian queens that produce good honey gatherers; no foulbrood. Select tested, \$1.25; tested, \$1; untested, 75c; 6, \$4.25; 12, \$8. No bees for sale. D. T. Gaster, Rt. 2, Randleman, N. C.

FOR SALE—Three-band Italian queens. Untested, \$1.25; select untested, \$1.50; tested, \$2; select tested, \$2.25; breeders, \$5 each. All queens mailed promptly. H. W. Fulmer, Box A, Point Pleasant, Pa.

WANTED—To buy or exchange queen bees for Barnes foot power saw. R. O. Cox, Greenville, Ala., Rt. 4.

OUR BRIGHT ITALIAN QUEENS will be ready to ship after April 15. Untested, 75c each, \$8 per doz., or \$65 per 100. Safe arrival guaranteed. Tillery Bros., Georgiana, Ala., Route 5.

BEEES AND QUEENS from my New Jersey apiary. J. H. M. Cook, 1Atf 84 Cortland St., New York City.

TESTED leather-colored queens, \$2.00; after June 1, \$1.50; untested, \$1.00; \$10 per doz. A. W. Yates, 3 Chapman St., Hartford, Conn.

FOR SALE—Fine Italian queens, at 75c each; \$8 per dozen. Safe arrival guaranteed. T. J. Talley, Greenville, Ala., Rt. 3.

FOR SALE—Northern Bred Italian Queens; hardy, prolific goldens, each, \$1; six, \$5. Allen R. Simmons, Claverack, N. Y.

FOR SALE—3-banded Italian queens, 55c; ten, \$5. Circular free. O. C. Wandrie, Frazee, Minn.

FOR SALE—Three-banded Italian queens; untested, one, \$1; six, \$5; twelve, \$9. Tested queens, \$1.50 each. Rob't B. Spicer, Wharton, N. J.

PURE 3-banded Italian queens, as good as you can buy with money; no disease, and every one guaranteed. Write for prices. No more nuclei or colonies for sale this season. J. F. Diemer, Liberty, Mo.

GOLDENS that are true to name. Untested queens, \$1; 6, \$5; 12, \$9; 50, \$35; 100, \$67.50. Garden City Apiaries, San Jose, Calif.

THREE-BANDED ITALIANS ONLY—Untested queens, each \$1; 6, \$5; 12, \$9; 50, \$35; 100, \$67.50. H. G. Dunn, The Willows, San Jose, Calif.

BOTH Italians and hybrid bees at \$2.50 per pound with untested queen; 2 pounds, with queen, at \$4. Mrs. T. H. Carruth, Big Bend, La.

SWARTS GOLDEN QUEENS produce golden bees of the highest qualities; satisfaction guaranteed. Mated \$1.6 for \$5; tested \$2. D. L. Swarts, Lancaster, O., Rt. 2.

FINEST ITALIAN QUEENS, June 1 to November, \$1 each; 6 for \$5. My circular gives safe methods; free. J. W. Romberger, 3113 Locust St., St. Joseph, Mo.

GOLDEN ITALIAN QUEENS—No better honey gatherers anywhere at any price. Untested, \$1; tested, \$2. Wallace R. Beaver, Lincoln, Ill.

FOR SALE—Pure Italian queens; goldens that are golden, and Doolittle's choice stock. Select untested (laying queens), 1, \$1; 6, \$5. tested, \$1.50; best breeders, \$5. For large lots write for prices. Pure mating, safe arrival and satisfaction I guarantee. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

GOLDEN QUEENS that produce Golden workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, \$1 each; tested, \$2; breeders, \$5 and \$10. 2Atf J. B. Brockwell, Barnetts, Va.

QUEENS—H. D. Murry's strain of 3-banded Italians; reared by the Doolittle method. Prices untested, 1 for \$1, 6 for \$5, 12 for \$9. No disease. Safe arrival and satisfaction guaranteed. O. D. Rivers, Route 4, Honey Grove, Texas.

FOR SALE—Colonies of extra fine strain Italian bees, with select tested queens, in new 1-story 8-frame single wall-hives, standard full-depth, self-spaced Hoffman frames, \$10 each, f. o. b. here. The bees are free from disease. Wilmer Clarke, Earlville, Madison Co., N.Y.

THE LAST TIME You Bought QUEENS

did you get what you were looking for? Were they thrifty, hardy, gentle and beautiful? Were they the Imported Queens Americanized? Were they guaranteed to reach you in good condition, to be purely mated and to give perfect satisfaction? These are the qualities that have enabled

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to stand over a quarter of a century of actual test. That has brought them up to a standard surpassed by none, but superior to many.

Untested	1	6	12
Select Untested	\$1.00	\$ 5.00	\$ 9.00
Tested	1.25	7.00	11.00
Select Tested	1.50	8.75	17.00
	2.00	11.00	20.00

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DELAYS ARE DANGEROUS

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FOR SALE—New crop clover honey, extracted, two 60-lb. cans to case, 20c per lb.
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GOLDEN and 3-banded Italian queens will be our specialty. We can also furnish Carniolians. Tested \$1, untested 75c each. Bees, per pound, \$1.60; nuclei, per frame, \$1.60. Send your order for bees early.
C. B. Bankston & Co., Buffalo Leon Co., Tex.

THREE-Banded and Golden Italian Queens and pound packages from the Sunny Southland.
Grant Anderson,
Rio Hondo, Texas.

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CASH paid at your bank for carlots and less, of comb and extracted honey.
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WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co.,
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WANTED—White or light amber extracted honey in any quantity. Kindly send sample, tell how your honey is packed and your lowest cash price; also buy beeswax.
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WANTED—Comb, extracted honey, and beeswax
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WANTED—Honey We are in the market at all times for unlimited quantities of honey, both comb and extracted. Before selling your crop let us hear from you, quoting your lowest price, either f. o. b your station or delivered Cincinnati. If extracted mail sample, state how it is put up; if comb honey, state grade and how packed.
C. H. W. Weber Co., Cincinnati, O.

WANTED

WANTED—A second-hand 2-frame honey extractor. Send description and lowest price.
J. J. Fitzgerald, Mitchell, S. D.

WANTED—White sweet clover seed; send sample; state quantity and your lowest price in first letter.
Dadant & Sons, Hamilton, Ill.

WANTED—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.
Dadant & Sons, Hamilton, Ill.

WANTED—Second-hand honey extractors; tell me what you have and price; also wax presses.
W. D. Soper, Jackson, Mich.
Dealer in all kinds of Bee Supplies.

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WANTED—Two men to work with bees; state age, experience and wages; position for season, or may be permanent for right man after trial.
The Rocky Mountain Bee Co.,
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WANTED — Industrious young man, fast worker, as a student helper in our large bee business for 1918 season. Truck used for out-yards and hauling. Apiaries located near summer resorts. Will give results of long experience and board and small wages. Give age, weight, experience and wages in first letter.
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[The WORLD is Our Market]

Crop Report and Market Conditions

For our July number we asked the following questions with regard to conditions:

1. Condition of honey plants compared to last year?
2. How is the honey-flow?
3. Honey movements and prices. What is being offered by the buyers for honey?
4. What do you expect to realize for your honey?

HONEY PLANT CONDITIONS

Conditions are extremely spotted this year with regard to honey plants. In some localities the conditions are favorable, while in others the reverse is true. All in all, it seems that in the whole eastern half of the country the plant prospects will hardly be up to last year. Reports by States follow:

Massachusetts reports 100% as good as last year; Connecticut is fair, with New York sending in conflicting reports, the average of which would hardly warrant expecting as good a stand of honey plants as last year.

The South is about normal, with Kentucky showing a decided improvement over 1917, as does Alabama and Mississippi.

Pennsylvania only shows a fair prospect, while Ohio seems to be about 135% as good as 1917. Michigan is about normal, while prospects in Wisconsin are very poor.

Illinois has much more clover than last year, and Iowa very much less. In fact, the only parts of Iowa where much honey will be harvested are where there is basswood and sweet clover. Missouri again has very poor prospects; Nebraska claims 50%, while Kansas is about normal, as is South Dakota. Minnesota's honey plants are only 50% as abundant as in 1917.

Texas reports very much better conditions than last year. It is to be hoped so, as conditions last year over a majority of the State were about as bad as could be.

In the whole of the West conditions are at least as good as in 1917, with the exception of Idaho, which had such a splendid crop last year that it doubtless will not be completely duplicated in 1918. In California plant conditions range from 60 to 100% of 1917.

THE HONEY FLOW

The New England States expect a very good flow. New York claims she will have 75% of 1917.

In the South there should be as much honey produced as in 1917, even though Georgia claims less. Alabama and some of the other sweet clover regions, should help bring up the average.

Pennsylvania expects only a fair crop, while Ohio's hopes are still high. Wisconsin will have a partial failure, with Michigan producing probably 60 to 80% of what she did in 1917. One large producer in Minnesota expects a failure on account of drought. Other reports would indicate half a crop.

Indiana and Illinois may have some honey, while Iowa and Missouri will approach a crop failure, unless the weather should be extremely favorable towards honey secretion the latter half of the summer.

There is little or no flow in Texas now, but prospects are good for later flows.

It is yet a little early to predict for the West, as their flow does not begin in earnest till July. New Mexico al-

ready reports honey coming in fairly well. The whole West should average slightly better than in 1917, and with at least as many bees to gather the crop.

The orange honey flow in California has been very satisfactory, with that from sage not so good. The total crop cannot excel that of last year very much.

HONEY PRICES

Some buyers are still offering as low as 13½ cents for honey on contract. The bulk of offers are in the neighborhood of 15, 16 and 17 cents. Several cars of orange have been bought of producers at 21 cents, while some of the producers are holding their orange crop for 25 cents. One commission firm on the coast offered a car of orange a few days ago for 21½ cents f. o. b. coast.

One or two beekeepers have sold their crop at 17 cents, while one car of Imperial Valley honey was sold recently at 17½ cents f. o. b. shipping point.

With very few exceptions, all old honey is cleaned up, and at prices ranging at 20 cents or better.

The demand for honey is exceedingly good, in fact better even than it was at this period last year. Foreign buyers are appearing in the field, some making arrangements through their home consulates to get ocean transportation as soon as the crop is available.

The stringent regulations on sugar will no doubt help the sale of honey at home, even at the higher price.

HONEY PRICES EXPECTED

There is the greatest contrast between conditions among beekeepers this year and last. Last year it seemed that the beekeepers were anxious to sell, and at the prices offered by the buyers. This year very few forward contracts have been made. The majority of producers are willing to wait and take what the market will be at the time they are ready to sell their crop.

The bulk of suggestions as to price expected ranged around 20 cents for extracted, wholesale, and \$5 per case for comb. Some state that they are going to hold for 25 cents wholesale in car lots.

With present prospects not too flattering for a honey flow total in excess of last year, and with the demand as strong as it is already, it seems that a price of 20 cents for white extracted, wholesale, should not be out of the way. How much higher the price may go is hard to conjecture.

Push your Home Market,
even though prices
are high.

The time may come again
when Home Markets
will be useful.

KEEP INFORMED ON TEXAS CONDITIONS

The **Beekeepers' Item**, a monthly paper edited by Mr. Louis H. Scholl, well known to our older readers, and an authority, has many interesting items which should interest beekeepers, not only in the Southwest, but throughout our country.

In order to allow you to become acquainted with this paper, we offer a special combination of **Beekeepers' Item** one year with **American Bee Journal** for only \$1.25.

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Texas Queens

No more bees in packages, but queens galore from June 1 to October 1. Untested, 75c each, \$8 per doz.; tested, \$1.25 each, \$12 per doz. I have the Three-banded Italians and Golden Italians; very choice stock.

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Have no superiors—"There's a reason." Are Mendelian bred, good qualities accentuated. Gray Carniolans, Gray Caucasians, most gentle of all, prolific, hardy, vigorous, disease resistant, white comb builders—they deliver the goods.

ITALIANS, 3-banded, line bred, pedigreed; need no boosting; they speak for themselves. Prices on application at either apiary.

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Five and ten-pound pails, also five-gallon cans and glass jars.

Queens, three-banded and Golden Italian, ready for delivery now. Untested, \$1 each; 6 for \$5.50; 12 for \$10; tested, \$2; 6 for \$10.

Safe delivery guaranteed, dead queens being replaced upon their return.

THE DERROY TAYLOR CO.
Newark, New York

Golden Italian Queens

RUSTBURG, VA., R. No. 3, March 18, 1918.

Mr. Ben G. Davis:

Dear Sir—Please find enclosed \$5, for which please send me the very best Golden Queen you can for the money. If you can't ship her at once, please notify me. I ordered one from you 3 years ago last fall that was the best I ever saw. Her bees stored 320 pounds of comb honey the first year. I have several of her daughters that are fine.

Hoping to get a good one again, I am yours truly.

J. W. LAWRENCE.

PRICES OF QUEENS

	Nov. 1 to May 1			May 1 to June 1			June 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12
Untested	\$1.50	\$ 7.50	\$13.50	\$1.25	\$ 6.50	\$11.50	\$1.00	\$ 5.00	\$ 9.00
Select Untested	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00
Tested	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00
Select Tested	3.00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00

No Nuclei or Bees by Pound.

Safe arrival, purity of mating and satisfaction guaranteed.

Queens for export will be carefully packed in long distance cages, but safe delivery not guaranteed.

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"I have tried queens from several different places and like yours best of all."—C. O. BOARD, Alabama, N. Y.

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Price List of Our Golden and Three-Banded Italian Queens

Untested	\$.75; 25 or more, \$.60 each	Select untested	\$.90; 25 or more, \$.75 each
Tested	1.50; 25 or more, 1.25 each	Select tested	1.75; 25 or more, 1.60 each

We guarantee safe arrival of all Queens, that they are very resistant to European foulbrood, and, in fact, will give complete satisfaction. Wings clipped free of charge. Our capacity is 2,000 Queens monthly.

M. C. BERRY & COMPANY, Hayneville, Alabama, U. S. A.

Mr. Beekeeper:

Increase your honey crop by giving the bees all the super room that they can fill.

We will help you by furnishing you with fixtures ready for use, at the lowest prices.

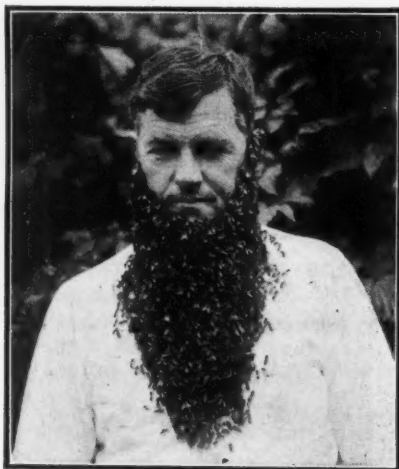
Hives and supers, nailed and painted; frames, wired and filled with full sheets of foundation; sections, filled with foundation, can be shipped on short notice.

The LEWIS LINE is in the lead with the live honey producers.

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from our vigorous strain of

Italian Queens

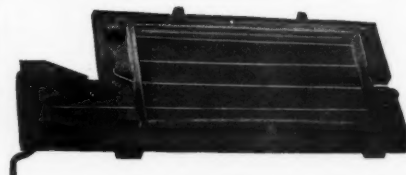
They have won a national reputation as disease resisters and great honey-getters.

Our prices for delivery after June 15:

Untested, 1 to 4, \$1 each; 4 to 6, 95 cents each; 6 to 9, 85 cents each; 9 to 12, 80 cents each; 12 to 24, 75 cents each.

Tested, \$1.50 each.

Breeders, \$5 each.

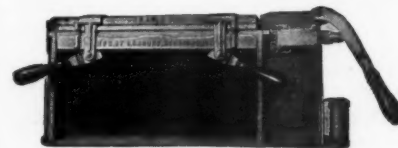


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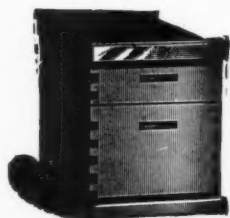
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Will take your Beeswax in trade at highest market price.

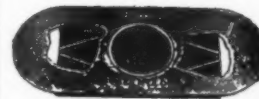
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